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THE TRACE ELEMENTS IN BIOLOGICAL MATERIALS

●Students of nutrition recognize a total of some thirteen inorganic elements either as essential to humans or, in our present state of knowledge, as probably desirable for complete nutrition. For certain of these elements—definitely proven to be essential—reasonable estimates of the daily human requirements have been made. In addition, the distribution in common foods of minerals, especially those essential minerals most apt to be deficient in the diet, is well understood. Certainly, enough information appears to be at hand to insure an optimal supply for the individual of these essential or desirable elements through modern diet planning.

However, for many years it has been known that traces of elements, other than those known to be essential, may be present in animal and plant tissues (1, 2). Improvements in analytical techniques have been made and greater precautions observed in the handling of the materials used for analysis in studies reported within recent years. The results of these newer investigations have only served to confirm the fact observed in the older studies, namely, that "trace elements" may be present in biological materials, including mammalian tissues, along with the other elements recognized or accepted as essential in nutrition.

A fairly complete list of the trace elements includes silicon, aluminum, fluorine, nickel, arsenic, bromine, rubidium, barium, and selenium. The persistent occurrence of these elements in foods and in animal tissues logically raises two questions: First, are these elements essential in human nutrition, and second, assuming them to be essential, how might an adequate supply be obtained?

For the first of these two questions, there is as yet no conclusive answer (1, 2). Study of the possible part the trace elements may play in normal body functions comprises one of the frontiers of nutritional research. The fact that the trace elements are more or less consistently present in animal tissues is not necessarily conclusive proof of their essential character in nutrition; further research alone must decide that point.

The second of the above questions can be answered somewhat indirectly. It is not illogical to believe that we already recognize as essential those elements whose serious deficiency in the diet may produce the most serious irregularities in the human organism. Further, as stated above, the distribution of the known essential minerals in foods is well understood and by modern diet planning an adequate supply of these nutrients should be readily attained. It is not meant to imply that all of the trace elements are without significance in human nutrition, or that one essential nutrient is more important than another. Instead, it is intended to suggest that the distribution of all elements in foods is probably such that a protective diet—calculated to supply optimal amounts of all known essential minerals—should also supply the proper amounts of any unknown essential elements, as well.

Thus, the need for following the modern pattern of diet formulation is further indicated. The most practical means of insuring the needed quantities of all essential nutrients—recognized or as yet undiscovered—is to plan the ration according to the concepts and teachings of the modern science of nutrition. In pursuing the modern diet pattern (2), commercially canned foods should prove both valuable and convenient.

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THE IRON REQUIREMENT OF ADULTS[1]

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THE recent interest in hypochromic and iron deficiency anemias together with the development of simpler and more accurate methods for the determination of iron has given new impetus to the study of iron metabolism. Various types of studies have been employed in an effort to amplify our knowledge of the daily requirements of this metal under varying conditions. Simple observations on the amount of iron in the food consumed by individuals or groups have shown variations which range from 1.3 to 31 mg. per day (1–9). A study of iron elimination in fasting subjects (10) has suggested that a daily iron intake of at least 7.3 to 8 mg. is necessary to maintain equilibrium but this type of study is unsatisfactory since the conditions under which it is conducted are grossly abnormal and the iron from tissue destruction cannot be controlled.

Another type of study is that in which an effort is made to find the lowest intake which will maintain the individual in equilibrium. Lintzel (11) concluded by this method that "less than .9 mg. of iron per day is sufficient if there are no special demands" and Stockman and Greig (12) and Sherman (3) found it was possible to maintain equilibrium with a daily iron intake of 3.5 and 5.5 mg. Farrar and Goldhamer (13) concluded that "the iron requirement of the normal male is not more than 5 mg. per day", and others (14) have found that an intake of 6.1 and 6.2 mg. of iron per day was adequate for women during the intermenstrual period. Numerous iron balance studies have been carried out on persons receiving an adequate diet with a liberal amount of iron (10 mg. or more per day). These have been undertaken on normal and pathological subjects with varying results (11, 15–17).

The iron requirement is dependent upon three factors: the loss of hemoglobin iron by hemorrhage, the elimination of non-hemoglobin iron, and the formation of new iron-containing tissue. The loss of hemoglobin in normal menstruation must be considered and different observers (13, 18) have found the loss to be from 12 to 22 mg. per period. Barer and Fowler (19) in a study of 100 normal women found the loss of iron to vary from 2.28 to 78.96 mg. with an average of 19.54 mg. per period and in a

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study of pathological menstrual blood loss (20) found that as much as 220.15 mg. of iron may be lost during a single period. Obviously the iron requirement will vary directly with the amount of hemoglobin lost by this route as well as by other sources of hemorrhage.

The second factor directly influencing the iron requirement is the excretion of non-hemoglobin iron. The two main paths of excretion are by way of the kidneys and the bowel. The amount of iron excreted in the urine varies from .08 to 1.63 mg. per day and is constant for each individual (21). By far the largest amount is excreted in the feces but present methods fail to distinguish between iron which has passed through the gastro-intestinal tract unchanged and that which has been absorbed and re-excreted. Elvehjem, Hart, and Sherman (22, 23) have demonstrated that not all the iron contained in various foods is available so that there is a difference between the total amount of iron present in food and that which may be absorbed and utilized. Their findings have been confirmed by others (24, 25). Lintzel (26, 27) has suggested that iron is absorbed from the intestinal tract only in the ferrous state and Moore (28) has shown that the serum iron curves are higher after the ingestion of ferrous salts than after ferric salts. Whipple and Robscheit-Robbins (29), however, found that iron salts in the ferrous, ferric, or reduced state may be utilized with equal facility in the production of hemoglobin by the dog and they concluded that the "determining factor is the amount of iron metal" and not the state of the iron.

Gastric acidity plays an important rôle in the absorption of iron and many observers believe that achlorhydria and hypochlorhydria are important etiological factors in idiopathic hypochromic anemia (5, 30–34). Faber (35) has recognized the correlation between hypochromic anemia in children and the presence of achlorhydria or hypochlorhydria. Mettier and Minot (36) found iron more potent for hemoglobin formation when absorbed from an acid medium and Kellog, Mettier, and Purviance (37) were able to produce hypochromic anemia in dogs when the normal gastric secretion was absent. The importance of gastric acidity in the utilization of iron for hemoglobin formation is also indicated by the fact that alkali therapy retards the formation of hemoglobin in patients with peptic ulcer (38). Barer and Fowler (39) demonstrated the value of a normal gastric acidity in the retention of dietary iron but found that when large amounts of iron were administered the presence of an achlorhydria did not significantly alter its retention and utilization. The administration of decinormal hydrochloric acid did not increase the retention of supplementary iron.

The third factor directly influencing the iron requirement is the formation of new iron-containing tissue. The requirements of children during the period of growth and at puberty are unusually large (40, 41), but a discussion of this phase is not within the scope of this paper. The demands on the maternal organism for iron during pregnancy are also large and there is much discussion concerning the etiology of hypochromic anemia of pregnancy. Such anemias are common and some fail to respond to iron therapy (42) although in most instances the administration of iron is curative or prevents the development of this form of anemia, suggesting that an

iron deficiency is the basis for the condition (43, 44). Bethell (44) studied the iron exchange in one subject during the last 63 days of pregnancy and the first 12 days after delivery and found an intake of 7.1 mg. of iron per day to be adequate. However, Coons (45) found the average retention of iron during pregnancy far short of the estimated fetal needs and since the average iron content of the new-born is approximately 350 mg. (46) it would seem that the need for iron is greatly augmented during pregnancy.

Iron balance studies in pathological subjects, while few, have failed to show results which are strikingly different from those obtained in normal individuals. Bassett, Elden, and McCann (17) found that an iron intake of 12 mg. per day was adequate in nephritis. Numerous iron balance studies have been done in hemochromatosis (47–51) and although iron was retained they failed to show sufficient change from the normal to explain the etiology of the disease. Studies on the metabolism of iron in pernicious anemia (52–55) have shown that the requirements and retention do not differ greatly from the normal. In polycythemia vera there is not an unusually large retention of iron (56–58). These reports suggest that any changes in the metabolism of iron in such diseases must be extremely slight but of long duration.

The work reported here, while undertaken to serve as control periods for studies in which supplementary iron was to be given, is set forth as a separate study to supplement the data on iron metabolism. It is not to be inferred that these subjects are normal, and these data must therefore be placed with those of the pathological group.

METHOD

Forty-two patients served as subjects for this study and consisted of 9 males and 33 females with a wide variety of pathological conditions. None was included who was losing blood from any source; all were in a good state of nutrition and there was no loss of body weight during the period of observation. The activity of the patients was restricted while they were in the metabolism ward.

Three carefully weighed diets, which included neither liver nor spinach, were served to the patients on succeeding days. These diets were adjusted to the caloric requirements by varying the fat and sugar content. The average caloric value of the diet was 152 per cent of the actual basal requirement; the average protein intake, 1.11 gm. per kg. of body weight; and the average daily iron intake, 11.90 mg. There were some variations in these values necessitated by the individual demands but all dietary changes were made during the 3-day adjustment period which immediately preceded the 6-day observation period. All portions of food left by the patient were carefully weighed and calculations made accordingly. Repeated analyses of the diets approximated so closely the results obtained by calculation from the tables of Waller (59) that the calculated figures were used in determining the iron intake. Water, which contained less than 0.1 mg. of iron per liter, was allowed freely and was not included in the calculated iron intake.

All excreta were collected in glass or enamel vessels with precautions to avoid contamination. Creatinine was deter-

TABLE 1

PATIENT	DIAGNOSIS	SEX	AGE	BODY WEIGHT KG.	BMR %	BLOOD HB GM.	AVERAGE DAILY CALORIC INTAKE	DAILY IRON SUMMARY		DAILY NITROGEN SUMMARY		DAILY PHOSPHORUS SUMMARY		GASTRIC ACIDITY
								Ingestion mg.	Balance mg.	Ingestion gm.	Balance gm.	Ingestion gm.	Balance gm.	
1	Polycythemia vera	M	64	53.3	−6	22.3	2120	8.25	−4.39	11.99	+.93	1.63	+.08	Normal
2	Hypochromic anemia	F	46	69.6	−4	7.8	1881	9.13	−10.77	9.21	+.32	1.10	−.08	0
3	Idiopathic hypochromic anemia	F	25	53.1	+10	10.7	2167	9.69	−2.62	9.33	+.18	1.06	+.10	Normal
4	Idiopathic hypochromic anemia	F	35	51.9	−21	4.5	1913	9.72	−7.83	9.00	+.75	1.07	+.08	0
5	Hypochromic anemia—pregnancy	F	39	61.4	+7	7.7	2237	9.96	−11.05	10.06	+1.83	1.16	+.02	0
6	Menorrhagia	F	26	52.5	−2	4.3	1927	9.98	−9.91	10.89	−1.38	1.52	+.02	Low
7	Idiopathic hypochromic anemia	F	47	46.7	−2	7.8	2099	10.03	−.71	9.94	+.46	1.18	+.26	0
8	Menorrhagia	F	50	76.6	+0	10.2	2157	10.12	−2.10	9.98	+.29	1.18	+.06	Normal
9	Menorrhagia	F	44	62.0	−18	7.4	1712	10.17	−4.28	9.95	−.24	1.41	+.03	0
10	Idiopathic hypochromic anemia	F	37	59.8	−8	12.1	2002	10.26	−7.12	11.19	−.18	1.57	+.39	0
11	Lead poisoning	F	55	48.4	+23	7.8	1715	11.49	+2.27	9.84	+2.50	1.44	+.35	0
12	Idiopathic hypochromic anemia	F	42	55.0	+4	7.8	1794	11.59	+1.52	9.77	−.11	1.44	+.14	0
13	Infectious arthritis	F	51	65.0	+0	12.4	1830	11.78	−1.63	9.81	+.12	1.45	+.13	Low
14	Arteriosclerosis	F	69	65.0	−35	8.1	1830	11.78	+1.06	9.81	+1.84	1.45	+.27	Normal
15	Infectious arthritis	F	41	63.6	−17	11.9	1830	11.78	+2.64	9.81	+.71	1.45	+.33	Normal
16	Peptic ulcer	F	53	54.5		12.6	1816	11.81	+3.45	9.87	+1.05	1.44	+.23	Normal
17	Hemorrhoids	F	52	51.1	−4	5.6	1800	11.86	−2.14	9.79	+.89	1.44	+.21	0
18	Idiopathic hypochromic anemia	F	29	57.3	−11	5.5	1795	11.88	−3.15	9.87	−1.20	1.42	+.11	0
19	Idiopathic hypochromic anemia	F	40	54.7	−16	4.7	1787	11.89	−9.78	9.77	−2.09	1.44	−.18	0

20	Hemorrhoids	F	43	51.1	−11	6.9	1787	11.89	−5.05	9.77	−.21	1.44	−.13	Low
21	Idiopathic hypochromic anemia	F	34	48.1	−8	5.5	1787	11.89	−1.37	9.77	+.32	1.44	+.29	.....
22	Menorrhagia	F	45	60.7	+10	2.3	1787	11.89	+3.01	9.77	+1.11	1.44	+.24	0
23	Myxedema	F	53	49.3	−18	7.0	1787	11.91	+6.10	9.79	−4.32	1.44	−.10	Normal
24	Menorrhagia	F	34	60.4	−21	6.2	1778	11.96	+2.20	9.79	−1.11	1.44	+.18	Normal
25	Bronchiectasis	F	48	51.1	+8	8.4	1778	11.96	+4.64	9.79	+2.03	1.44	+.41	Low
26	Myxedema	M	59	85.6	−26	12.4	2041	12.19	+7.66	10.66	+2.92	1.47	+.54	0
27	Idiopathic hypochromic anemia	F	27	47.3	+13	6.6	2034	12.25	+1.67	10.57	−1.05	1.59	−.16	Low
28	Polycythemia vera	M	48	62.1	+3	19.8	2916	12.33	+4.09	14.02	+.69	2.08	+.26	Normal
29	Neurosyphilis	F	44	80.9	−6	6.1	1784	12.42	−6.40	10.22	+.64	1.46	+.15	0
30	Menorrhagia	F	23	49.4	+1	7.4	2270	12.51	+1.39	11.02	+2.29	1.62	+.39	Normal
31	Idiopathic hypochromic anemia	F	37	56.9	−6	5.8	1799	12.57	+2.91	10.21	+1.80	1.49	+.40	Low
32	Menorrhagia	F	21	39.3	+1	7.8	1972	12.69	−9.53	10.36	+4.76	1.49	+.16	Normal
33	Lead poisoning	M	32	62.7		8.1	1810	12.75	+5.37	10.11	+1.50	1.49	+.54	.....
34	Idiopathic hypochromic anemia	F	34	45.0	−6	6.1	1699	12.78	+1.66	7.66	−2.69	1.02	−.02	Low
35	Hypochromic anemia	F	33	55.0	+5	3.6	2171	12.96	−12.97	10.73	−.80	1.54	+.22	Normal
36	Hemochromatosis	M	50	59.3	+4	13.1	2015	12.97	−8.35	10.48	−1.90	1.15	−.11	Normal
37	Menorrhagia	F	23	59.7	−9	5.9	2008	13.03	−12.70	10.77	−.04	1.53	+.25	Normal
38	Hemochromatosis	M	53	61.1	+5	11.1	2063	13.42	+5.42	10.96	−.01	1.19	+.13	Low
39	Hemochromatosis	M	48	56.8	+25	11.3	2063	13.43	+1.94	10.96	−.04	1.19	+.05	Normal
40	Diabetes mellitus	M	51	60.5	−13	12.9	2063	13.43	−1.19	10.96	+1.86	1.19	+.10	Normal
41	Diabetes mellitus	M	68	78.4	−8	11.1	2063	13.44	−5.14	10.96	−.18	1.19	−.04	Normal
42	Pernicious anemia	F	53	53.4		8.9	2055	19.98	−3.06	13.48	+1.56	1.66	+.06	0

mined daily to assure the complete collection of urine. The stool specimens for the period were pooled and the nitrogen, phosphorus and iron content determined. Similar determinations were made on aliquots of the pooled urine specimens. The Kjeldahl method was used for the nitrogen determinations, the Fiske and Subbarrow technic (60) for the phosphorus, and the procedure of Reis and Chakmakjian (61) for iron. Blood hemoglobin values were obtained by the Newcomer method (62).

RESULTS

The average iron intake for this group of 42 patients was 11.90 mg. with a range of 8.25 to 19.98 mg. (table 1). The average daily iron ingestion of the group of 9 men was 12.47 mg. as compared with an average daily ingestion of 11.74 mg. for the women. With this intake of iron it was found that 18 were in a positive balance while 24 excreted more iron than they ingested. There were marked differences in the excretion of iron even with essentially the same iron intake, the average daily excretion being 13.68 mg., with a range of 4.53 to 25.93 mg. All of the 10 patients who ingested less than 11.49 mg. of iron per day were in a negative balance while only 14 of the 32 individuals who ingested larger amounts were in a similar state.

Evidence that diets containing from 3.81 to 6.76 mg. of iron per day are insufficient is given in table 2 (39). This represents the complete balance studies on 5 patients who received first a diet with a low iron content and subsequently a diet with a high iron content. The low iron diet resulted in a definitely negative iron balance in all but two instances (Patient 1, period II, and Patient 3, period II) in which the iron balances were +0.02 mg. and +0.65 mg., respectively. When four of these patients were subsequently given diets containing an increased amount of iron (12.22 to 15.53 mg. per day), all returned to a definitely positive balance. These results indicate that an iron intake of 5 to 6 mg. per day is definitely below the body requirement but that the higher values are adequate to meet the needs of these individuals.

It will be seen in table 1 that 5 of the 9 men studied were in a positive iron balance while only 13 of the 33 women were in a similar state. There is no physiological basis for this variation and the difference between the sexes is undoubtedly explained by the ingestion of larger amounts of food and the resultant larger intake of iron by the men.

The degree of anemia suggests itself as an explanation for the variations in the amount of iron retained by the individuals on approximately the same intake of iron. It might be assumed that the individual with a severe hypochromic anemia would demonstrate a marked avidity for iron but such is not the case as is shown by patients 4, 6, 19, 22, and 35, who had less than 5 gm. of hemoglobin per 100 cc. of blood. Only one of these was in positive iron balance. In contrast to these is patient 28 who had an excessive amount of blood hemoglobin and was in positive iron balance although patient 1 with a similarly high blood hemoglobin was in negative balance. Additional proof of the lack of correlation between the amount of blood hemoglobin and the iron retention is furnished by patients 2, 5, 7, 11, 32 and 33, all of whom had a

TABLE 2

PATIENT	DIAGNOSIS	SEX	AGE	BMR %	PERIOD	BODY WEIGHT KG.	BLOOD HB. GM.	AVERAGE DAILY CALORIC INTAKE	DAILY IRON SUMMARY		DAILY NITROGEN SUMMARY		DAILY PHOSPHORUS SUMMARY		GASTRIC ACIDITY
									Ingestion mg.	Balance mg.	Ingestion gm.	Balance gm.	Ingestion gm.	Balance gm.	
1	Idiopathic hypochromic anemia	F	43	+8	I	66.6	4.0	1303	3.81	−5.82	5.22	−2.17	.76	−.27	Normal
					II	66.3	3.9	1736	4.48	+.02	6.44	+.79	.83	+.14	
					III	65.4	4.0	1802	12.22	+.92	9.22	+2.02	1.03	+.22	
					IV	65.2	3.9	1804	12.32	+4.41	9.23	+1.59	1.03	+.06	
2	Idiopathic hypochromic anemia	F	41	−7	I	51.3	12.5	1741	5.29	−3.39	8.28	−.92	1.17	+.16	0
					II	51.5	12.2	1741	5.29	−.71	8.28	+.04	1.17	+.35	
					III	51.3	12.7	1820	13.14	+1.24	11.36	+.40	1.44	+.21	
3	Hypertrophic arthritis	F	61	+14	I	78.4	13.1	1443	5.54	−2.03	8.36	−.48	1.22	+.32	.....
					II	78.0	12.9	1443	5.54	+.65	8.36	−.08	1.22	+.35	
					III	77.5	12.6	1390	5.49	−2.28	7.93	−.73	1.16	+.33	
4	Diabetes mellitus	F	19	+8	I	66.6	12.0	2241	6.67	−8.37	8.75	+2.75	1.21	+.06	Low
					II	67.7	12.0	2241	6.67	−1.94	8.75	+2.53	1.21	+.21	
					III	67.1	12.2	2075	15.53	+9.77	11.01	−1.03	1.26	−.01	
					IV	65.1	12.1	2071	12.85	+4.89	10.49	+.09	1.28	+.25	
					V	65.7	12.5	1963	12.48	+8.47	10.28	−1.70	1.25	+.10	
5	Diabetes mellitus	F	18	−18	I	56.1	10.8	2307	6.72	−6.56	8.88	+1.45	1.30	+.12	Low
					II	56.2	10.8	2313	6.76	−3.03	8.88	+2.58	1.30	+.21	
					III	57.5	11.0	2075	15.29	+7.95	10.94	+.05	1.29	+.23	
					IV	57.1	10.9	2071	12.85	+6.30	10.48	+1.85	1.28	+.37	
					V	57.0	11.7	2066	13.15	+2.59	10.71	+.98	1.29	+.29	

blood hemoglobin of approximately 8 gm. per 100 cc. of blood yet their iron retentions ranged from −11.05 to +5.37 mg. per day, 4 having been in negative balance and 5 in positive balance. Thus, the presence of a hypochromic anemia does not increase the retention of iron since negative balances were found with both normal and low blood hemoglobins (39).

A decreased gastric acidity undoubtedly plays an important part in the retention of iron. It is to be noted that the 10 patients who ingested below 11.49 mg. of iron per day were all in a negative balance and the ingestion of an insufficient amount of iron was undoubtedly partly responsible for this. Of these 10 patients, however, it is significant that 70 per cent had an achlorhydria or hypochlorhydria. In the entire group it is observed that of the 24 patients in negative iron balance, 11 or 45 per cent had an achlorhydria while this condition was present in but 4 or 22 per cent of the 18 individuals in a positive iron balance. It is obvious that an achlorhydria or hypochlorhydria has a significant influence on the retention of dietary iron. All of these patients were subsequently given medicinal iron by mouth in addition to the diet and all were in a positive iron balance (39, 51, 55, 63–65), indicating their ability to retain iron when supplied in larger amounts. These results indicate that in order to ensure the retention of adequate amounts of iron the daily intake in individuals with achlorhydria must be higher than in those with a normal gastric acidity.

SUMMARY

These data on 42 patients emphasize the necessity of an adequate intake of iron and suggest that from 12 to 15 mg. per day should be considered the minimum. A diet containing from 3.81 to 6.76 mg. of iron per day resulted in a negative iron balance whereas in the same patients a diet with 12.22 to 15.53 mg. produced a positive balance.

Achlorhydria and hypochlorhydria interfere with the retention of dietary iron and necessitate a larger intake to maintain equilibrium.

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IRON THERAPY

We can see from the discussions that the subject of iron therapy involves many controversial issues and that to some of the fundamental questions there are no positive answers. Certain points concerning the metabolism of iron are of direct importance in therapy. About 30 per cent of the body iron is present as reserves and this is called on to restore a deficiency in the circulating hemoglobin. After an acute hemorrhage, therefore, iron administration is of little or no value because the body first calls on these stores. When they are used up, as in the case of chronic hemorrhage, iron therapy becomes efficacious in speeding up hemoglobin formation. The discussion has brought out the fact that in the course of normal metabolism of the adult male the loss of iron seems to be negligible. An iron deficiency in the male, therefore, suggests that some form of bleeding must be taking place. It is for this reason that iron deficiency anemias are much more common in females, who lose about 20 mg. of iron with each menstrual period and about 375 mg. of iron with each pregnancy. The experience appears to be that infection reduces the efficacy of iron therapy in restoring deficiency in hemoglobin, but the exact nature of the injury by infection is not understood. We have discussed the question of the value of hydrochloric acid in iron therapy. It is rarely necessary, although some patients appear to require hydrochloric acid to facilitate the utilization of iron. Patients with pernicious anemia have achlorhydria but are not likely to suffer from iron deficiency, while some patients with hypochromic anemia appear to regenerate hemoglobin faster when hydrochloric acid is given together with the iron therapy. We have had a discussion of the question of whether ferrous or ferric salts are superior in the treatment of anemia. There seems to be no complete agreement. There is some good evidence that ferrous salts are better utilized than ferric salts, but some of the evidence on that point is open to criticism and in some of the studies the clinical efficacy of the two seems to be the same. If there are differences in the utilization of ferrous and ferric salts, it may be that their significance is largely lost in treatment, the doses of iron are so big by comparison with the amounts that are utilized. We need to keep an open mind on this question. There seems to be agreement that iron therapy should be given by mouth and that parenteral administration is rarely necessary. A plan for the use of iron in the treatment of anemia has been outlined. Adequate doses such as 500 mg. of iron a day to adults are likely to be associated with a reticulocyte response. This serves as an index of satisfactory reaction to iron therapy.—*Du Bois, E. F., Conferences on therapy, treatment of blood disorders, J. A. M. A., 114: 2207, 1940.*

THE SANITIZATION OF DISHES[1]

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DISHWASHING should be an important phase in the process of food preparation and serving. The customer should not only receive good food, well prepared, but he should have the food served on clean, sanitary dishes. Unfortunately, the process of dishwashing in the restaurant receives less supervision than any other operation. As long as the dish appears reasonably free of visible soil and few complaints are made by the clientele, dishwashing in the average establishment is considered satisfactory.

Dish sanitization is not in any sense a major health problem, but it is nevertheless important. There is little question that improperly cleansed and sanitized dishes constitute a health hazard. It does not take any imagination to realize that used dishes and silverware carry mouth micro-organisms and that unless they are properly sanitized, organisms will be present on the cleaned dishes.

It is extremely difficult, if not impossible, to evaluate the extent to which disease is transmitted by dishes and eating utensils. During the first World War, Cummings and his associates (1) investigated the rôle of dishes in the transmission of influenza. In cantonments where dishes were washed by machine with hot water, the incidence of influenza was much lower than in similar camps where the dishes were merely rinsed by the soldiers in barrels of lukewarm water. Cummings is of the opinion that considerable disease is spread by improperly cleaned and sanitized dishes.

Many mouth bacteria are carried on dishes and silverware. The presence of mouth spirochetes was demonstrated on beverage glasses by Lyons (2) who collected swab cultures from 200 used and clean glasses in eight taverns in two cities. In one tavern 8 out of 62 glasses when returned from the table carried *Borrelia vincenti*, the spirochete causing trench mouth. In another establishment 3 out of 22 used glasses and 4 out of 20 clean glasses carried this organism.

In a similar manner, Devereux and the writer (3) examined beverage glasses for the presence of mouth streptococci. In many cases where 5 glasses were examined in a tavern, 3 of the glasses or 60 per cent showed the presence of streptococci. Out of 15 glasses examined in one series of tests, 8 carried streptococci and one glass carried hemolytic streptococci.

The fact that used beverage glasses carry streptococci and spirochetes, which are frequently disease producers, is indicative of the presence of many other disease-producing bacteria and viruses. The washing of such glasses in a common receptacle means the discharge of these micro-organisms into the wash water and a redistribution of the organisms on all of the dishes washed in the same water.

It is, of course, impossible to apply technics routinely for the isolation and identification of disease-producing bac-

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teria in dish examinations, for two reasons: first, the failure to find such organisms is not sufficient evidence of sanitary conditions and second, the technics necessary are impractical for application to routine test purposes. For these reasons a more simple technic had to be evolved which would serve as an indicator of unsanitary conditions. Accordingly, various methods of examination were applied. The test finally adopted follows:

TABLE 1

Total bacteria counts obtained on dishes washed by approved procedure by machine

DATE	BACTERIA PER UNIT					
	Plate	Fork	Spoon	Cup	Glass	Average
2/29/38	10	10	70	0	50	28
3/ 5/38	0	30	70	0	20	24
3/30/38	0	0	40	160	10	42
4/ 7/38	0	10	20	30	10	14
5/12/38	10	40	10	450	30	108
6/ 1/38	0	10	180	0	280	94
7/12/38	10	20	40	120	60	50
10/13/38	10	0	10	10	60	18
10/25/38	0	0	0	50	40	18
11/16/38	90	0	20	80	20	42
11/30/38	10	40	0	10	10	14
12/ 6/38	0	50	50	10	10	24
4/22/39	0	10	0	0	10	4
4/28/39	0	0	0	0	20	4
5/ 6/39	0	20	130	60	80	58
5/11/39	10	90	0	40	20	32
Average	9.3	20.6	40.0	63.7	45.6	35.8

Cotton swab sticks are prepared and placed in test-tubes or special swab-bottles containing 0.75 ml. of saline solution. The tubes are then sterilized by steam under pressure. Each of the glasses and cups are swabbed by passing the swab three times over the outer and inner surface of the rims. The spoons and forks are swabbed by wiping the portions entering the mouth. A two-inch square on the surface of a plate is swabbed. The swabs are immediately returned to the laboratory and cultured by the dilution method on plain nutrient agar. The cultures are incubated at 37°C. for 48 hours.

When this technic was applied in a food establishment using machine washing under approved procedure, the results in table 1 were obtained. In 16 examinations made over a period of a year the average bacterial counts were as follows: plate, 9.3; fork, 20.6; spoon, 40.0; cup, 63.7; and glass, 45.6. The average for all articles examined was 35.8 bacteria per unit. During this entire period of examination, the average bacterial count did not exceed 100 bacteria per unit except in one instance in which a cup yielded a bacterial count of 450.

Table 2 presents data for a food establishment using machine washing but not approved procedure. In 9 examinations made over a period of a year the average bacterial counts were as follows: plate, 765; fork, 3095; spoon, 2011; cup, 3319; and glass, 1415. The average for all articles examined was 2121 bacteria per unit.

The data obtained from these two food establishments present in striking contrast the effect of proper and improper machine washing on the bacteria. The fact that such unbelievable numbers of bacteria can survive washing and rinsing processes certainly indicates that disease-producing bacteria might be present on utensils and glassware. On the other hand, in a properly operated machine the number of bacteria per unit-utensil can easily be maintained under 100.

It is impossible to determine epidemiologically the maximum number of bacteria which could be present on dishes without constituting a health hazard. However, if we can show that the only surviving bacteria are saprophytic spore-forming organisms of no sanitary significance and that such conditions can be easily maintained by proper procedure without additional expense, such standards are justifiable. This we have been able to prove over a period of years in a survey that included all restaurants in a city of approximately 80,000 people, using a maximum of 200 bacteria per unit-utensil as a standard.

TABLE 2

Total bacteria counts obtained on dishes washed by unapproved procedure by machine

DATE	BACTERIA PER UNIT					
	Plate	Fork	Spoon	Cup	Glass	Average
4/ 8/37	230	16,000	3000	15,000	130	6872
4/27/37	380	180	600	3400	1000	1112
10/22/37	170	170	130	10	70	110
11/ 8/37	0	870	950	1810	150	756
11/27/37	480	6000	1150	1310	1070	2002
12/16/37	1830	60	230	410	30	512
1/19/38	1040	880	10,000	5000	280	3440
2/12/38	110	3650	1130	2220	10,000	3422
3/19/38	2650	50	910	710	10	886
Average....	765	3095	2011	3319	1415	2121

TABLE 3

Total bacteria counts obtained on dishes washed by proper hand procedure

DATE	BACTERIA PER UNIT					
	Plate	Fork	Spoon	Cup	Glass	Average
4/27/37	100	10	60	210	20	80
11/10/37	20	80	40	10	40	38
12/ 2/37	10	20	0	80	10	24
12/18/37	500	50	10	370	200	226
1/19/38	20	50	80	40	30	44
2/23/38	30	120	30	140	0	64
3/30/38	0	40	20	0	20	16
5/ 5/38	50	10	70	80	20	46
7/ 8/38	40	40	10	10	20	24
10/13/38	10	0	10	20	0	8
11/30/38	650	370	50	110	20	240
1/12/39	30	10	10	40	30	24
5/ 6/39	60	30	0	30	70	38
Average	117	64	30	88	37	67

These standards are equally applicable to hand-washed dishes and eating utensils when proper procedures are followed as demonstrated in table 3. With the exception of two series of tests, bacterial counts were always under 100 bacteria per unit-utensil. These data demonstrate the practicability of the procedure.

WHAT CONSTITUTES PROPER PROCEDURE?

Wash Water. The ideal temperature of the wash water in machine washing, primarily, is that which is most effective in cleansing the dishes. The temperature should be high enough to melt all fats, yet not hot enough to cause coagulation of albumens which would otherwise adhere

to the dishes and prevent proper cleansing. In general, it will be found that a temperature of 120°F. (48.8°C.) gives most effective action. Very few bacteria are injured at this temperature which is only slightly above the maximum for growth of most pathogenic bacteria. This means that in a multiple tank machine an accumulation of bacteria would occur. Cox (5) showed (table 4) that in a multiple tank machine at 120°F. the bacteria count increased from 317 to 24,600 in 90 minutes operation. The picture obtained in a single tank was approximately the same. When the wash water temperature was 140°F. (60°C.) effective bacteria reduction occurred but at this temperature cleansing action is less effective.

Detergents. The writer (4) demonstrated that the detergents used would offer some germicidal action when used in conjunction with heat. Using a one per cent solution of trisodium phosphate, sodium meta silicate, or the like, we found that no reduction of bacteria counts was obtained at 104°F. (40°C.) but at 122°F. (50°C.) an appreciable reduction occurred and at 140°F. (60°C.) marked reduction occurred. Little benefit can be expected from the action of the detergents as the concentration used in practice is generally less than one per cent; second, due to the crude methods of application used, the concentration of the detergent varies continuously. No dependence can be placed upon the supplemental germicidal action of the detergent.

It can be definitely stated that in good washing practice there is a marked build-up of viable bacteria in the wash tanks of both multiple and single tank machines.

The number of bacteria entering the wash tanks can be materially reduced by proper scraping of the dishes. The removal of bacteria and soil can be increased by the installation of a preflusher, a simple contrivance devised to flush the soil off the dishes by a strong spray of water as illustrated in figure 1.

TABLE 4

*Bacteria counts of wash waters for standard processing periods at varying temperatures**

WASH WATER TEMP., F.	BACTERIA PER ML. IN WASH WATER TANK	
	After 1 minute	After 90 minutes
Multiple tank machine		
120°	317	24,600
130°	291	17,400
140°	186	2400
150°	93	320
160°	42	214
165°	27	184
170°	12	67
Single tank machine		
	After first run	After 90 minutes
120°	326	22,800
130°	301	17,500
140°	213	2600
150°	118	289
160°	16	41
170°	5	22

* Cox, W. C.: Am. J. Pub. Health, 28: 177, 1938.

In order for detergents to act, the hardness of the water must first be reduced to zero. Hardness resulting from calcium and magnesium is corrected by forming insoluble salts of these elements or by fixing them in an inactive and soluble state.

Soaps and such detergents as trisodium phosphate soften the water by forming insoluble calcium and magne-

sium salts which frequently adhere to the dish and produce a film. This film not only acts as a protection for encrusted bacteria but also prevents a free rinsing action and the removal of bacteria.

The formation of insoluble calcium and magnesium salts can be avoided by the use of sodium metaphosphate. This substance has the unique property of fixing the calcium and magnesium ions in an inactive soluble form, thus eliminating not only the possibility of film formation but also a gradual removal of previously existing film. Studies made by Swartz and Gilmore (6), Mallmann and associates (7), and Cox (5) show definitely that dishes or equipment washed with detergents containing sodium metaphosphate carry fewer bacteria than those washed otherwise.

Rinse water. The temperature of the rinse water should be high enough to kill all bacteria adhering to the dishes as they leave the wash water. Too hot water should be avoided as "flashing", that is, spotting of dishes by salt depositions from the water, will result. With proper temperature, bacteria can be killed and the dishes will drain so that the drying of the surfaces will not leave unsightly spotting. Cox (5) has shown (table 5) that at a temperature of 170°F. the increase of bacteria in the rinse water is insignificant while at lower temperatures there is an appreciable increase in the number of organisms. These data show definitely that a temperature of 180°F. is desirable for effective results.

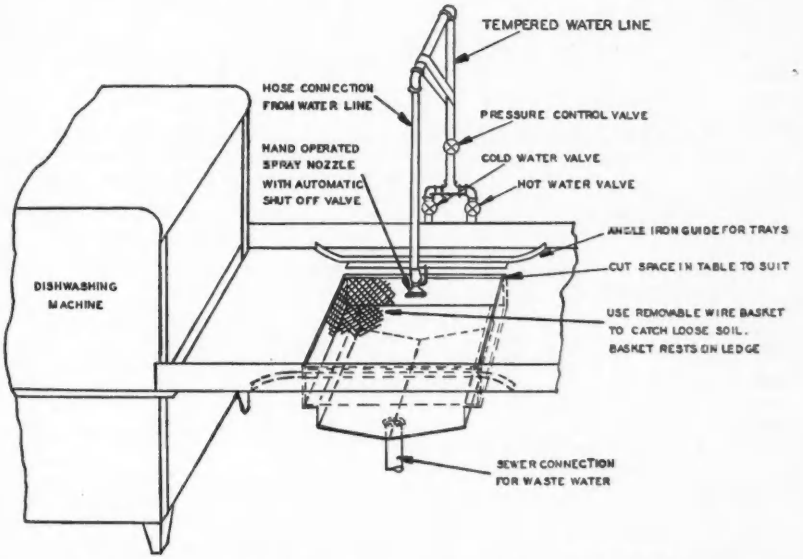
TEMPERED WATER LINE
HOSE CONNECTION FROM WATER LINE
PRESSURE CONTROL VALVE
HAND OPERATED SPRAY NOZZLE WITH AUTOMATIC SHUT OFF VALVE
COLD WATER VALVE
HOT WATER VALVE
ANGLE IRON GUIDE FOR TRAYS
CUT SPACE IN TABLE TO SUIT
DISHWASHING MACHINE
USE REMOVABLE WIRE BASKET TO CATCH LOOSE SOIL. BASKET RESTS ON LEDGE
SEWER CONNECTION FOR WASTE WATER

FIG. 1. DIAGRAM OF A PRE-FLUSHER (COURTESY OF CALGON, INC., PITTSBURGH)

Wiping. The toweling of dishes and silver, in general, is an objectionable and unnecessary process. Towels are likely

TABLE 5

*Bacteria counts of rinse water for standard processing periods at varying temperatures**

RINSE WATER TEMP., F.	BACTERIA PER ML. RINSE WATER	
	After 1 minute	After 90 minutes
140°	7	2800
150°	9	2200
160°	5	281
170°	5	94
180°	2	57
185°	1	18
190°	1	12

* Cox, W. C.: Am. J. Pub. Health, 28: 177, 1938.

sented in table 6. In a restaurant where dishes were properly washed, for a period of three months the average bacterial count per unit was 2391 bacteria. "Clean" towels were examined bacteriologically and found to carry innumerable bacteria. It was found that for economy and convenience the towels were washed at the restaurant and dried in a basement room with a relatively high humidity. The towels thereupon were sent to a commercial laundry and the average bacterial count

TABLE 6

The effect of contaminated towels on the bacterial counts of machine washed dishes*

DATE	NUMBER OF BACTERIA PER UNIT					
	Plate	Fork	Spoon	Cup	Glass	Average
Contaminated towels						
10/22/37	1140	1760	600	820	3220	1058
11/17/37	20	140	110	160	140	114
12/ 2/37	20	4600	1010	800	400	1366
12/18/37	90	360	160	310	450	274
2/12/38	50	760	1060	130	2930	986
Average.....	224	1524	588	444	1428	849
Sterile towels						
2/29/38	10	10	70	0	50	28
3/ 5/38	0	30	70	0	20	24
3/30/38	0	0	40	160	10	42
4/ 7/38	0	10	20	30	10	14
Average.....	2.5	12.5	50	47.5	22.5	27

* Contaminated towels, improperly washed, innumerable bacteria.

to be a source of bacteria and can be a distinct hazard if the towels are not properly laundered or changed frequently. Too frequently, towels are used until they become wet, are then allowed to dry, and again put into use. A vivid demonstration of the part played by improperly laundered towels is per unit was subsequently reduced to 27 organisms.

CONCLUSIONS

It has been the writer's experience that the average restaurant owner does not know what is meant by correct wash water temperature. *Hot water* means

water that is uncomfortable to the hands. Many restaurants use rinse waters at temperatures ranging from 110 to 130°F. In fact, it has been unusual to find restaurants using rinse waters at temperatures of 180°F. or higher. The writer believes that each restaurant should be provided with a thermometer for determining and maintaining proper temperature of water in the machines.

Inspectors should check rinse water temperatures at the end of the dishwashing run to be sure that an adequate supply of water is available. Many times the temperature of the rinse water is correct at the start of the wash but due to an inadequate supply of hot water, the temperature falls rapidly and the latter part of the rinsing is done with water well below a temperature of 180°F.

Operators should be instructed in the proper manner of stacking dishes in the racks so that the wash and rinse water can reach each article. Overpacking of trays should be prohibited at all times.

Dishes should be properly scraped to remove all excess food particles, particularly grease. A pre-flusher should be installed to avoid the introduction of waste material into the wash compartment of the machines.

Dispensers should be installed on all machines for economical dispensing of the detergent agent and also to keep the amount of detergent at the proper concentration for effective action. Manual application of detergent means uneven dispensing and a cyclic cleaning process wherein both clean and dirty dishes, successively, are obtained.

Film should be avoided on dishes and in machine in order to allow thorough rinsing of the dishes and to eliminate the need of toweling for removal of lime depositions from glass and chinaware.

Machines should be checked at regular intervals to make certain that spray nozzles are not plugged. Single tank machines should be checked to determine whether dilution is excessive thereby avoiding wastage of detergent and hot water with its concommitant, ineffective cleaning.

Dishes should be swabbed at intervals and examined bacteriologically as a check on bacterial counts which should be below 100 per unit.

Dishwashing is one of those disagreeable tasks which should not be relegated to incompetent help without proper supervision. Dishwashing is an important part of serving meals and should be under as close supervision as the other procedures in meal preparation.

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Medical Women Among the Egyptians

It is evident from the records that to the Egyptians it seemed natural that women should be trained to become healers of disease. They had always been admitted to the royal medical schools. Pliny and many other writers tell us about the old school at Heliopolis (near modern Cairo), which was already a very ancient foundation when Moses and his wife studied there. Its graduates were given public offices with good salaries, and they treated the poor in what we might call free dispensaries. Euripides and Herodotus wrote eulogies on the intelligence of the Egyptian women and their skill in industry, commerce, medicine, and law.

At Saïs, near the sea on the Rosetts mouth of the Nile, was the woman's college where gynecology and obstetrics were specialties. There is an inscription found at Saïs which delights the heart of a modern woman doctor: "I have come from the school of medicine at Heliopolis, and have studied at the woman's school at Saïs where the divine mothers have taught me how to cure diseases," showing quite plainly that medical women were professors of Saïs and received pupils from all over the known world.–*Hurd-Mead, K. C.: Women in Medicine, Haddam, Conn.: The Haddam Press, 1938.*

Children's diseases were treated according to certain specified rules by men or women as doctors or priests. Even the diet was prescribed by law and it contained a liberal allowance of fruit, fish, and vegetables, and probably broad beans and lupins, which are still grown in Egypt as the staple of diet.—*Hurd-Mead, K. C.: Women in Medicine, Haddam, Conn.: The Haddam Press, 1938.*

DIETARY FACTORS IN RHEUMATIC DISEASE OF CHILDHOOD[1]

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RHEUMATIC disease of childhood fortunately is not common but due to its seriousness it represents the foremost unsolved problem of childhood diseases. Because the etiology is still obscure, progress in the treatment and prevention is slow and unsatisfactory. It is generally accepted that rheumatic disease presents a variety of symptoms which might involve almost any organ of the body. The well recognized rheumatic manifestations are termed rheumatic fever, chorea, and rheumatic heart disease. Any one of these conditions can exist alone or any two or all three may exist in the same child. In addition to these severe rheumatic symptoms a child may have mild rheumatic symptoms that are not clearly classified which may, however, be the forerunner of more serious manifestations.

Rheumatic disease has its highest incidence in urban populations of the north temperate zone. It also occurs in other sections of the world, particularly in localities where there are wide fluctuations in temperature. The disease appears to be more prevalent among the poorer classes of society, although not necessarily the poorest. The existence of unfavorable environmental conditions such as overcrowding, insufficient food and clothing, and frequent respiratory infections, are believed to be influential factors in the high familial incidence of the disease among the children of the poor. This distribution of the disease has also suggested the possibility of some dietary deficiency as one of the predisposing factors.

Rheumatic disease may develop at any age. Children between the ages of six and twelve are most vulnerable but children below and above that age zone are by no means spared. The most serious form of rheumatic disease, rheumatic fever, has the characteristics of any acute infection—fever, painful swollen joints and such other symptoms that may follow the absorption of toxic material. At least 65 per cent of the children who have rheumatic fever develop some disturbance in the heart. If chorea develops first, and no rheumatic fever, heart disease is less likely to ensue. Occasionally rheumatic fever and chorea exist in the same child. It is also possible for rheumatic heart disease to develop without any evidence of either rheumatic fever or chorea. Rheumatic infection in childhood is looked upon with great concern chiefly because it is liable to recur even after recovery from the first attack. The mortality from the disease is high over a five-year period, varying from 8 to 15 per cent. Prolonged disability in childhood and possible permanent impairment of the heart function make this disease one that contributes many cripples to the adolescent and young adult period.

For many years investigators have probed into etiological factors which

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might reveal a solution to the mystery that surrounds this disease. This search has gone on in the laboratory, at the bedside and in the field. The investigator has tried in vain to reproduce rheumatic disease in animals and the search for a specific cause has not yet been achieved. The clinician has studied the many symptoms and signs of this disease and even when the fatal cases were followed to the autopsy table the observations made thus far have not clarified the behavior of this malady. To be sure, methods of treatment have been discovered that are helpful but the real control of the disease has not been accomplished. In the field, the epidemiologist and public health worker have attempted to study the factors that surround the homes where this disease usually develops. In England, particularly, extensive field studies have been made. Though none of these studies has revealed the causative factors and the mode of spread of this disease, new avenues of investigations were opened, one of which concerns the possible influence of a dietary deficiency.

Among the various theories advanced as an explanation for the cause of rheumatic fever, the infectious theory has received the greatest support. Since the beginning of this century emphasis has been placed on the relationship of upper respiratory infections, notably tonsillitis, to rheumatic fever. Various observers have noted that from 60 to 70 per cent of attacks of rheumatic fever are preceded by an attack of tonsillitis or sore throat. This applies not only to the initial attacks of rheumatic fever but also to recurrent attacks. Since a streptococcus germ is usually the predominating organism in these throat infections it has been assumed that the same germ or some product of it may be the exciting factor in the production of the rheumatic infection. The relationship of rheumatic fever to the presence of the hemolytic streptococcus germ has not been definitely demonstrated. One of the difficulties in accepting this theory is encountered when no evidence of a previous streptococcus throat infection can be demonstrated in some cases of rheumatic fever. Another unexplained situation is that rheumatic fever develops only occasionally in children who have had a tonsillitis due to a hemolytic streptococcus germ. It has been suggested that some other factor exists, such as a constitutional deficiency, that may be detrimental to the child and thereby conditions him to a systemic infection that had its origin in the apparently mild respiratory infection. Thus a search has been made for some deficiency that might be a contributing factor in making a child vulnerable to the absorption of the bacterial invader. This hypothesis has been strengthened due to the fact that a correlation between the incidence of juvenile rheumatism and poverty has more than once led to the suspicion that some error of diet might be a causative factor in the disease.

Simultaneously a number of investigators have endeavored to show that a vitamin deficiency does exist in rheumatic children. The epidemiology of the disease has given further impetus to these studies. It has long been known that in the tropics where citrus fruits are abundant this disease rarely occurs as we see it in the northern

climate. In fact all streptococcal infections occur more frequently in cold or temperate regions. It was therefore assumed, without any scientific justification, that a basic deficiency might exist in certain individuals which permitted the development of streptococcal infection. Certain experimental studies encouraged workers to probe this possibility. The work of Rinehart is particularly noteworthy. He reported data which indicated that under the combined influence of vitamin C deficiency and infection guinea-pigs developed with considerable frequency endocardial, myocardial and articular lesions bearing rather close resemblance to those of rheumatic fever. On the basis of these observations, the concept was advanced that rheumatic fever may be the result of the combined influence of vitamin C deficiency and infection. It is known that the child with scurvy due to vitamin C deficiency is more vulnerable to infection. Therefore a mild or subclinical scurvy not easily recognized by the usual clinical tests may also lend susceptibility to infection.

When methods for the accurate determination of vitamin C became available, the rôle of this vitamin could be more readily studied in any child. Abbasy, Hill and Harris in England undertook a survey of a group of rheumatic and control children to determine the rate of excretion of vitamin C in these subjects. The results of their studies can be summarized by stating that both active and convalescent rheumatic subjects excreted considerably less vitamin C than the standard levels noted in control subjects. This condition existed even when the rheumatic individuals received diets similar to the control subjects. It was also noted by these authors that when the regular daily intake of vitamin C was greatly increased, it took the rheumatic subjects, both active and convalescent, longer to reach a given level of excretion than did the controls receiving the same large dose of orange juice. Various investigators have made similar observations on the metabolism of vitamin C in rheumatic individuals. In general, there is no agreement as to the significance of these findings. It is not yet certain whether this impaired excretion of ascorbic acid is a constitutional abnormality that was present before the rheumatic infection took place or whether it developed after the rheumatic infection was established in the individual. To support the latter contention one notes that a similar situation exists in tuberculosis.

Influenced by these findings, studies were undertaken in Rochester on the metabolism of vitamin C in rheumatic children. The methods employed were a study of the urinary excretion of vitamin C and the amount of vitamin C in the whole blood of rheumatic and control children. Studies were also made on the relationship of vitamin C in the blood and the incidence of hemolytic streptococci in the tonsils. The urine and blood determinations were made by Dr. Estelle Hawley in accordance with the approved method for these determinations. In children with acute rheumatic fever the vitamin C concentration in the blood was usually considerably below the normal for children of the same age. This situation existed even when the vitamin C intake had been considered adequate. During convalescence the vitamin C

blood level was higher but still below the level found in children of like age who did not have rheumatic disease. In other acute infections such as pneumonia, pyelitis and scarlet fever, similar determinations did not uniformly show the low vitamin C values in the blood. It appears, therefore, that vitamin C blood levels are generally lowered in acute rheumatic infection more so than in other acute infections. This is probably not due to a dietary deficiency but is a result of the infection.

Further tests were made on rheumatic and non-rheumatic children to determine the effect of saturation tests on the vitamin C blood level. For this experiment, two groups, one rheumatic the other nonrheumatic children who were inmates of the convalescent hospital for children, were investigated. These children were living under uniform conditions and had been receiving the same diet for at least six weeks. Several blood determinations had been made on all of these children in order to get the base line of their average vitamin C blood concentration. All of the children were then given additional amounts of orange juice totalling 200 mg. vitamin C daily. At the end of two weeks blood from the two groups was examined and the response to this saturation test with vitamin C was recorded. In the rheumatic children the average increase of vitamin C was .15 mg. per cent and that of the non-rheumatic children .28 mg. per cent. This experiment was repeated in six months with similar results. It seems, therefore, quite likely that rheumatic infection impairs the ability of the organism to store vitamin C and suggests that much larger quantities must be given to rheumatic subjects to supply the needs.

In the light of all these observations on the metabolism of vitamin C the questions naturally arise: Will adequate or increased amounts of vitamin C prevent rheumatic infection, and will the disease be favorably influenced if one gives greatly increased amounts of vitamin C during the illness? Rheumatic fever occurs less frequently now than some years ago. The present generation of children receive more vitamin C than those of previous generations but many other factors may be involved in bringing about this decline in the incidence of the disease. It is not improbable that adequate amounts of other vitamins play a beneficial rôle in building up the constitutional resistance as well as does vitamin C. No positive answer can be given to the first query but the fact remains that it is safer to avoid a vitamin C deficiency than to correct it after it occurs. Attempts have been made to treat acute rheumatic fever with large amounts of vitamin C, using both the natural and the synthetic vitamin. No immediate results were noted in the treated individuals. It is impossible to state whether these subjects had a shorter period of disability or were in any way spared as far as complications were concerned. The course of rheumatic fever varies greatly and so many factors can influence it that no one dietary factor plays the deciding part. It is generally conceded by physicians who are familiar with the treatment of rheumatic disease that more than average amounts of vitamin C should be given to rheumatic patients not only during their illness but for a long time after recovery.

Because of the emphasis placed upon vitamin C requirements in this disease one should not get the impression that other phases of diet are unimportant in the management of rheumatic disease. The one fact that has been well established in the epidemiology is that the disease occurs more frequently in poor homes where inadequate diet may play a part in breaking down the resistance of the child. There can be no doubt that a food deficiency may predispose to this infection as well as to any other infection. There is, however, no evidence that any special food factor, other than vitamin C, is intimately associated with the causation of rheumatic disease.

Once a child has developed rheumatic disease careful medical supervision is essential to bring about recovery and to safeguard against a recurrent attack. The three important procedures that every rheumatic child needs are: (1) complete and prolonged rest, (2) proper food for maximum nutrition, and (3) protection against recurrent respiratory infections. When these favorable conditions can be established and maintained, better results in the ultimate prognosis can be expected. In the maintenance of good nutrition the food factors play an important part. To overcome the anemia frequently present in the chronic rheumatic child a diet rich in iron should be included. Supplementary feedings in the form of mid-morning and mid-afternoon lunches are helpful and of course the well-balanced diet needed by any growing child should not be denied the rheumatic child. To supply the vitamin C requirements orange juice or other citrus fruits are usually employed.

CONCLUSIONS

There is experimental and clinical evidence that vitamin C plays an important part in determining the resistance of the animal organism to certain types of bacterial infections.

There is considerable evidence that rheumatic individuals have a deficient amount of vitamin C in the urine and that the vitamin C blood level is lower than in normal individuals and in other febrile conditions.

The administration of adequate amounts of vitamin C will not prevent rheumatic infection or promptly bring about recovery. There is some evidence, however, that in a rheumatic subject there is an increased need for vitamin C.

There is sufficient clinical evidence to stress the importance of regular and adequate amounts of vitamin C administration in all individuals suffering from rheumatic disease.

STUDENT TRAINING IN A COOPERATIVE RESIDENCE HALL

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COOPERATIVE residence halls on college campuses have sprung up everywhere from Boston to Seattle in the last few years. The depression has been the main factor in stimulating interest in this plan for college housing and when once established under efficient management, the cooperatives have proved to be permanent institutions. It has been found advantageous to adopt a cooperative plan in many schools thereby effecting a material saving in living costs and at the same time providing a good standard of living for the students. In addition to the financial advantage to the student, such a plan of organization affords an excellent opportunity for the student majoring in dietetics and institution management to apply classroom theories and principles in a real situation.

Van Zile Hall, the women's residence hall at Kansas State College, was organized on the cooperative basis in the fall of 1933. Due to the economic situation, the hall was only partially filled during the previous year. Students with limited financial resources sought less expensive places in which to live. Since the change in policy, each semester there is a waiting list of students, sometimes even more than can be admitted during the year. From the time the cooperative plan was inaugurated, approximately 80 per cent of the 130 residents, including the student supervisors, have participated. The residents who do not wish to work in the cooperative group pay an additional ten dollars a month for room and board and are excused from all work responsibilities.

Recognition of the possibilities of enlarging the experience of undergraduate students in institution management, through supervised practice work in the cooperative residence hall, led to an experiment during the last half of the second semester of the school year 1933–1934.

Dietetic and institution management seniors living in the hall were given an opportunity to assume certain supervisory responsibilities in the various groups of which they were members. A ready response by these upper class women and a thorough belief in the value of the project by the college administration, resulted in the acceptance of the plan as a permanent feature. One semester of student supervisory work in the residence hall became a requirement for graduation in the dietetic-institution management curriculum with the beginning of the fall term in 1934.

Students have believed there should be no credit for this practical work, so grades have been no incentive. However, the quality of the work done by the student during the semester which she spends as a student supervisor is used as the basis for recommendations by the hall manager for those students wishing to enter the institution field after graduation.

Specific prerequisite courses for this student supervisory work are food preparation, quantity cookery, institution equipment, and institution food buying.

Dietetics and experimental cookery often parallel the residence requirement. It is highly desirable that these two courses precede the practice work but this is not always possible since many are transfer students from other institutions who necessarily have irregular schedules.

The work of the student supervisors is conducted under the direction of the manager and assistant manager of the residence hall. In order that high standards and unity of training may be maintained, these women are staff members of the Department of Institutional Management in the Division of Home Economics. The manager ranks as an associate professor and the assistant is a graduate student who is a candidate for the degree of master of science in home economics, with a major in institution management. These managers check all plans, hold group and personal conferences, and oversee the student work in general. In addition they perform the usual administrative duties common to the management of any residence hall.

The student supervisors make up the personnel of the class in Organization and Administration of Institutions. This class is taught by the manager of the residence hall. Considerable time is allowed during class hours for group conferences and discussion of subjects relating directly to the routine and detailed problems at hand, as well as to the study of organization and management problems usually offered in such a course.

Preceding residence in the hall, at least two observation periods are required and assignments to groups and first week duties are planned and discussed. Written outlines describe standard practices and procedures. These preliminaries help to give the prospective student supervisors a definite picture of what is expected of them and make them feel that they will be an integral and indispensable part of the residence hall organization.

Two or three student supervisors, dependent upon the number enrolled in the class, function as leaders in each of the six groups of cooperating residents. Groups change duties each Monday and rotate in the order listed (table 1). The weekly responsibilities of each supervisor are arranged so that heavy duties are alternated with the lighter assignments. One week she will plan the menus, make schedules and supervise the cooperating

TABLE 1

Schedule of cooperative work

GROUP	1ST WEEK	2ND WEEK	3RD WEEK	4TH WEEK	5TH WEEK	6TH WEEK	HOURS
No. 1	Breakfast	Office	Lunch	House	Dinner	Rest	Breakfast 1 hr. 15 min.
No. 2	Office	Lunch	House	Dinner	Rest	Breakfast	Office 1 hr.
No. 3	Lunch	House	Dinner	Rest	Breakfast	Office	Lunch 1 hr. 15 min.
No. 4	House	Dinner	Rest	Breakfast	Office	Lunch	House 45 min.
No. 5	Dinner	Rest	Breakfast	Office	Lunch	House	Dinner 2 hr.
No. 6	Rest	Breakfast	Office	Lunch	House	Dinner	

students in her group in the preparation and service of breakfast. The next time she is on meal duty, she will have charge of the dining room service. Housekeeper and assistant housekeeper duties alternate with office duties. Thus, by the end of the eighteen weeks, the student supervisor will have had varied experience in different phases of the management and operation of a small residence hall.

It is found that the student supervisors must make many adjustments. Few college senior women have had an opportunity to assume responsibilities commensurate to those with which they now find themselves confronted. Many are nervous and fearful at first but soon become accustomed to the routines without the aid of regular trained employees. They enter directly into the work from the first day of registration until the end of the semester. In the spring semester they have an opportunity to help close the hall for the summer vacation.

The actual experience of all students participating in the cooperative plan is made as far-reaching in its educational value as possible, both in the food service and house departments. Constant attention of the managers is focused upon the individual student supervisors during the first days of the training period and until they become familiar with equipment, procedures, and routines. Later they are often left to carry through an entire service by themselves, which gives them a sense of satisfaction and accomplishment.

The first work sheets of the student supervisors are carefully checked and approved. Later the supervising student is permitted to carry through her own plans with little interruption unless mistakes are too apparent. Much deeper impressions are made through experiencing the effects of certain errors than if they had been prevented by the manager with a mere explanation. Both oral and written comments are made by the managers as the occasion may merit. Evaluation of her own work by each student is encouraged.

The recognition and maintenance of good food standards are essential. One of the big problems involved is to develop in these students the ability to transfer principles of food preparation acquired in other classes to the quantity basis. Practice in handling quantities of food and manipulating power equipment has been limited heretofore to the experiences in the quantity cookery laboratory course. The possibilities for the student supervisors to increase their familiarity, efficiency, and accuracy in such procedures are unlimited in this project, but naturally all do not recognize or take full advantage of these opportunities. In the quantity cookery course, the students usually have been responsible for the preparation of one or two items; now they must organize and carry through the preparation and service of an entire meal within a specified period of time. Through such experience they soon learn to evaluate time and correlate speed and technics with the preparation processes. The student supervisors find it advantageous to make time and motion studies whereby they may increase the efficiency of the students working under their direction and reduce the expenditure of their time and energy.

More time is spent by the student supervisors in the food service than on

other assignments. Each meal of the day, for a period of one week, is prepared and served by a different group. Menus are planned by the three kitchen supervisors. After each menu is approved by the manager, copies of the combined menu are sent to each kitchen supervisor. The standards for an adequate diet approved by the Department of Food Economics and Nutrition at Kansas State College are used as the basis for checking. The menus are planned on a daily 35-cent raw food cost.

Store-room and recipe orders for their respective meals are made out by the kitchen supervisors before a specified time each day. There is little opportunity for the student supervisors to do actual buying. In lieu of this, the three kitchen supervisors make complete food orders for the week and go over them as a group with the manager. A discussion of varieties, sizes, numbers, sizes of containers, quality, and comparative prices of each item affords opportunity for review of subject matter on food buying.

Schedules for each member of the cooperative group are made and sent to her by the student supervisors for the following week. These are built around class schedules and the work hours must be planned to make possible the performance of all necessary procedures. Daily work sheets giving specific directions for each member are written by the student supervisor and posted on the kitchen bulletin board by the time the first worker reports for duty.

The kitchen supervisor is responsible not only for planning the menus but for overseeing the food preparation and service of the meals for which she is accountable, in so far as her class schedule permits. Usually she can be present for the entire breakfast and dinner schedules, but often she is in class during the lunch preparation activities in which case she posts the written work sheets.

The care and appearance of the dining room, with the exception of the waxing of floors, is under the direction of the dining room supervisors. In addition, they train the waitresses and are in charge of the dining room during the serving period. They make reservations and arrangements for the seating of guests, check such details as light and heat, keep records of the numbers served, and are responsible for leaving the dining room and kitchen in order after each meal.

Once every six weeks each group is responsible for the care and upkeep of the house department. The only regular employee in the organization, a bath maid, works six hours each day in the second and third floor bathrooms and the two houseboys wax floors, wash windows, and do odd jobs as they are needed. The residents care for their individual rooms but the cooperative groups are responsible for the cleaning and care of all social rooms, corridors, stairs, library, guest rooms, bathrooms on first floor, and the student laundry. Detailed outlines of procedures for each duty have been prepared by the manager as the student supervisors have had no previous specific training in institution housekeeping. The head housekeeper for the week, who is a student supervisor, schedules each member of her group and supervises the early morning cleaning of the first floor, and checks the afternoon cleaning of living rooms, and corridors on all floors. The assistant

housekeeper or second student supervisor in the group is responsible for supervising the early cleaning of stairways, corridors, and social rooms on second and third floors. Also she functions as linen maid if there are only two student supervisors in the group.

The linen maid is responsible for checking all linens to and from the laundry. She has charge of storage and the regular weekly linen exchange, makes a record of laundry accounts, discarded linen, and does minor repair work.

The duties of the student supervisors in the office group are varied, depending upon the number of majors enrolled. The chairman for the week schedules the members of that group for duty in the front office. She spends seven hours during the week on routine office work as an assistant in the office of the manager. Here she becomes familiar with the system of accounts, checks and files invoices, keeps the perpetual inventory up to date, sends out schedule forms to the supervisors for the coming week, helps check monthly statements and assists with the correspondence or other office work. At the end of each month assigned student supervisors are responsible, as a group, for taking the physical inventory of food and cleaning supplies, and for making the monthly profit and loss statement. These reports include the per capita raw food cost, the total food percentage, and the distribution costs for the various food items. The work of the second student supervisor in the office group is to weigh and measure ingredients for all recipes listed on the daily recipe orders.

All of the food service and housekeeping activities at Van Zile Hall afford an excellent opportunity for senior women in dietetics and institution management to become better adjusted to group living and to gain practical experience and training in supervision before assuming the responsibilities given them in advanced training courses or in their first positions. A large number of these students live in rooming houses, private homes, apartments, or in their own homes prior to the semester in the residence hall and have but little idea how to adjust to a larger group. Neither have they had an opportunity to check the extent to which they possess those qualities so necessary for harmonious human relationships in institution units. Supervising a group of fifteen or more co-workers with as many different personalities challenges the tact and other qualities of leadership of any inexperienced supervisor.

With the acquisition of confidence in their own abilities, they are better able to organize their own work and that of others and to cooperate with and teach inexperienced fellow workers, and they are soon able to assume responsibilities far beyond their expectations. Manipulative processes become less indefinite and there is a more conscious effort toward efficient work habits. High standards for all phases of the work are stressed and tend to become firmly fixed in the minds of the student supervisors. Food costs and financial problems become realities.

It is the first time many of these students have been able to justify certain related curriculum requirements, and a greater appreciation of the whole educational process is noted. Observation over a period of seven years leads to the conclusion that this training stimulates

greater development of mature and professional attitudes in the senior student majoring in the dietetic-institution management curriculum than any other one feature of her college training. The personal development of each student is watched and guided. The manager is given an unusual opportunity to become well acquainted with each student through the close associations during the semester. This is not possible for the formal classroom instructor or personnel director.

The training given these dietetic-institution management senior majors at Van Zile Hall is not complete by any means. Eighteen weeks of such experience can only introduce undergraduate students to some of the practical problems involved. However, it does help to give them a basis upon which to decide whether they have chosen their vocation wisely. Many students in advanced training courses, in staff positions, and those who marry and go into their own homes report that the experience as a student supervisor at Van Zile Hall has been invaluable to them in many ways. They heartily agree with the administration that the opportunity to practice classroom theory in a real situation as undergraduate students is to their advantage, regardless of what they may do following graduation.

TRENCH FOOT

Christian Champy and Roger Goujard discussed before the Academy of Sciences and the Academy of Medicine the role of vitamin B deficiency in trench foot, which has again made its appearance. The symmetry of the lesions, the fact that only certain army units and certain classes of troops are troubled by it, its frequency in alcoholic persons and the effect of the cold season have always pointed to an internal agent, probably vitamin B deficiency. If this assumption is true, it would account for the localization of the lesion under the influence of a physical cause acting peripherally. Unlike beriberi, trench foot is not usually accompanied with generalized neuritis. After subjecting animals to a regimen deficient in vitamin B, they exposed them to conditions similar to those of the soldiers in the trenches. Controls were used and were given the same diet but without exposure to cold. The authors found that the accidents of vitamin B deficiency appeared much earlier in animals exposed to cold. They believe that the process of thermogenesis activates a larger consumption of glucides, in the production of which, it is generally agreed, the effect of vitamin B can be recognized. The edemas of trench foot are attended by degenerative processes in the sciatic nerve, while phenomena of general neuritis are not in evidence. Their conclusion is that trench foot is preceded by a vitamin B deficiency and that the best prophylaxis consists in supplying regular doses of this vitamin.—*Foreign Letters, Paris, J. A. M. A., 114: 1471, 1940.*

HAWAII'S PUBLIC SCHOOL CAFETERIAS[1]

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THE major aim of the public school cafeterias is to offer at the least possible cost an adequate and satisfying lunch to the children in the public schools of Hawaii. There are additional important educational objectives in cafeteria service such as Americanization and practice in the democratic way of living. However, these pages deal chiefly with the major phase of the service as stated above. At present lunches are served to approximately 65 per cent of the total public school enrollment. In 1939 there were 145 school cafeterias in operation serving an average of 56,000 lunches daily. The largest cafeteria serves 2000 lunches daily; the smallest, 50.

While the cafeteria administration concerns itself chiefly with the business of planning, preparing and serving the meal, community agencies share in making the project one of keen interrelationships. Among the agencies who work closely with school officials in promoting better health in the Territory are the University of Hawaii Nutrition Research Laboratories, the Territorial Central Nutrition Committee, plantation health clinics and board of health centers.

Lunches are closely supervised in all elementary schools. An attempt is made to educate the children and their mothers in a better understanding of their food needs. During the supervised luncheon period a place to wash hands, water to drink and a clean, attractive table, all help to create a normal social eating situation. The emotional atmosphere during a meal is recognized as of great import and a sincere attempt is made to approach as much as possible a wholesome home and family situation at lunch time.

Not all the school cafeterias are equipped with adequate dining space, therefore in many instances students must eat their lunches in the classrooms. No matter where the meal is eaten or whether the food is brought from home or purchased in the cafeteria, it is supervised. It is not unusual to find the children starting their meal with a simple grace, their soft, tuneful voices blending harmoniously. It is also not unusual to find the table artistically decorated with Hawaiian flowers. In some instances doilies are woven from leaves of the native hala tree (lauhala), or attractive table sets are made of bleached flour or cement sacks. After the meal, teeth are brushed, and a rest period rounds out the health project.

During the year 1938–39, Mrs. Bessie Brooks West, professor of institution management at Kansas State College, served as a visiting instructor at the University of Hawaii. After visiting cafeterias on four of the islands, she submitted the following statement:

> Among the aims of the school lunch suggested by Mary deGarmo Bryan of Columbia University in her book, *The School Cafeteria*, is the serving of nourishing noon meals in order to help combat malnutrition and to maintain

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> in the children health and vigor essential to the success of the teaching program. It is my belief that the Territory of Hawaii is fulfilling this aim to a greater extent than any state on the mainland United States. Nowhere, to my knowledge, is any state making available to so large a percentage of public school children nutritious meals at as low a cost. The benefit to the health of the children can hardly be overestimated. The plan in itself is sound, and receives the enthusiastic and hearty support of all those persons necessary for its functional results in a highly successful organization.

In addition to the main meal, milk plays an important part in the food service of school cafeterias. Seventeen thousand half-pints of fresh milk are served daily, most of which is pasteurized grade A. A Graham cracker, cookie, banana, or other supplement accompanies each bottle of milk. In all elementary schools a special period is scheduled for milk drinking.

In some schools, children who cannot afford to pay five cents for fresh milk are being offered evaporated milk drinks at one or two cents. Eighty-six schools have instituted this service and the number is increasing, especially in outlying districts where pasteurized milk is not easily available. Another penny service offered at approximately the same number of schools is vegetable soup. This is served before school, or as a mid-morning meal, as a supplement to cold lunches from home, or as a mid-afternoon snack just before the children leave school. In many instances, especially in rural districts, children leave home as early as 6:00 a.m. and do not return until 6:30 p.m. after attendance at foreign language schools. Unless meals are properly spaced and adequate, such a long school day is a considerable strain on a growing child's vitality. These penny meals average 9000 daily.

There are certain noteworthy achievements in the cafeteria service which bear mentioning here. These concern the use of those foods which counteract recognized deficiencies in the ordinary diet of Hawaiian school children.

For example, brown unpolished rice is used exclusively in all school cafeterias. The Oriental practice of using highly polished rice as a basic food has been adopted by too many of the other racial groups in Hawaii. The cafeterias, therefore, are making an effort to replace white rice with the more desirable foods such as taro, sweet potato, Irish potato and brown rice.

Fresh vegetables and fruits play an important part in the lunch service. The minimum amount of vegetables and fruit per five-cent hot plate is set at one-third pound as purchased. The goal for the future is one-half pound per meal per child. Last year, approximately four and one-half tons of vegetables and two and one-half tons of fruits were purchased daily throughout the Territory.

Vegetables most commonly used in the preparation of school lunches are bean sprouts, string and wax beans, watercress, Swiss chard, several varieties of cabbage, green onions, beets, carrots, sweet and Irish potatoes, pumpkin, taro, turnips and egg-plant. Fruits served most frequently are banana, pineapple, papaya, apple, orange, and dried fruits. Public school cafeterias are increasingly aware of the value of vegetables and fruits.

Whole-grain breads are used exclusively. White bread is no longer seen on the lunch plate. Bakeries are preparing for the cafeterias a special bread, the formula of which calls for not less than 14 per cent rice bran or polishings and 10 per cent powdered skimmed milk. The place of whole-grain breads in cafeteria service is firmly established. In addition, many schools serve whole-grain cereals for morning breakfast.

A few popular five-cent plate lunches are: (1) beef and vegetable stew, mashed potatoes, bread and butter sandwich; (2) vegetable and beef chop suey, brown rice, and banana; (3) meat loaf, mashed sweet potato, buttered string beans, and bread and butter sandwich; (4) corned beef and cabbage, brown rice, and bread and butter sandwich; (5) baked spaghetti and hamburger, cold slaw, and bread and butter sandwich. Occasionally a penny chocolate bar or a cookie is served with the five-cent plate at no extra charge.

In the preparation of such low-cost meals the strictest economy is essential. The following are a few of the general practices to which all lunchroom managers must adhere in order to achieve the necessary economy and to safeguard the children's health:

1. Candy sales are discouraged in elementary schools.
2. When ice cream is sold, it must be preceded by either a cafeteria lunch or a satisfactory home lunch.
3. Approximately ten pounds of meat are used for every one hundred servings. When costs are unusually low or when finances permit the quantity is increased.
4. One pound of butter is used to every seven pounds of bread. Here again the amount may be increased as finances permit.
5. One pound of brown unpolished rice is used to serve ten portions.
6. A "Standard" grade of canned goods is encouraged. "Choice" or "Fancy" grades are prohibitive in price.
7. Waste is avoided by limiting the variety of food sold in any one school day. Thus the amount of preparation is greatly simplified.
8. Vegetables costing more than five cents a pound find no place in the cafeteria lunch. Vegetables are often purchased through school gardens. In a few places contracts are made with growers so that vegetables may be obtained throughout the year. Frequently vegetables are supplied by the school children from home gardens. Most of the commonly used fresh vegetables are available throughout the year in Hawaii.
9. Plantations often give surplus fruit to the schools at little or no charge. It is not uncommon to see a large slice of pineapple on each lunch plate.
10. The use of dried legumes in place of expensive canned vegetables is encouraged. Dried peas can be prepared at one-fourth the price of the same variety canned.
11. Jams and jellies are made from locally available, or dried fruits.
12. The making of mayonnaise in each cafeteria is advised.

Free lunches and free milk are furnished to needy children by civic or-

ganizations. Throughout the Territory there are many such free meals served regularly. Up to the present writing no surplus food has been distributed by the federal government.

In conclusion, there needs to be constant vigilance so that the whole school cafeteria system in Hawaii continues to be what it is today, a non-profit organization which enables Hawaiian school children to obtain adequate, low-cost meals. We are striving to live up to our slogan: "There must be no hungry child in the Public Schools of Hawaii."

HUNGER & APPETITE

The complex of sensation that urges the individual to take food is called hunger and appetite. Hunger is an intermittent or periodic unpleasant sensation of tension or pressure, a hollow or empty feeling in the epigastrium which may be accompanied by more or less headache, weakness, nausea, dizziness and nervous irritability. Appetite is a pleasant desire for food, which depends on a previous acquaintance with the food in question, and is accompanied with memory impression of sight, taste and smell of certain foods which have proved palatable to the individual. It has been suggested that the difference between hunger and appetite is of quantitative nature, the prime cause for both sensations being identical, but more intensive in hunger than in appetite. Most observers hold that the two are qualitatively different phenomena. Thus, one can have hunger and no appetite when one is angered or worried, or when offered food which is distasteful or repulsive due to bad taste or smell. The appetite becomes weaker and finally almost disappears after the first three or four days of continued starvation in spite of sustained hunger pangs. On the other hand, after hunger has been satisfied by having eaten enough, appetite may be aroused by some specially favored food. Appetite for certain food elements such as carbohydrates, table salt, calcium and certain vitamin bearing foods such as fresh vegetables or fruits may be present although the hunger has been satisfied.—*Rony, H. R., Obesity and Leanness, p. 49, Lea & Febiger, 1940.*

NEWER DIETARY TRENDS IN GALLBLADDER DISEASE[1]

B. B. VINCENT LYON, M.D.

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ONE of the problems that confront both doctor and dietitian is the fact that in biliary tract disease there may be other intra-abdominal organs with disease or disturbed function, either primary or secondary. For instance, gastroduodenitis, peptic ulcer, some disturbance of pancreatic function, an associated spastic or irritable colon, constipation, diarrhea, an associated cardiorenal disease, or a vitamin deficiency, is often associated with gallbladder or liver disease. Obviously such possibilities must be recognized by the physician.

Before discussing diets for biliary tract disease let us review the underlying principles. For instance, the liver, like the heart and the brain, is a vital organ, and the surgeon rarely dares to operate on the liver other than draining it by way of the extrahepatic ducts, incising abscesses or cysts, or freeing adhesions. The surgeon may remove the spleen, the entire stomach, many feet of intestines, the uterus, or one kidney, and sometimes parts of the pancreas, but he cannot remove the liver. The sick liver, like the sick heart, must be treated medically, and diet, therefore, plays an important part.

About twenty years ago Dr. Frank Mann of the Mayo Clinic began to experiment on removing the liver from dogs. At first, all so treated died within less than three hours. Subsequently he devised a two-stage operation—first an Eck fistula and then removed the liver. He thus succeeded in keeping the dogs alive for five or six hours. He observed, however, that all reacted similarly. After coming out of anesthesia a dog would behave fairly normally, would run around, wag his tail and respond to call like a normal dog for a certain period. He would then become less active and lean against the side of the pen as though tired. Then he would fall down in a sprawling, unnatural position. This was the first stage. Shortly thereafter twitchings in one paw and then another would be followed by generalized body twitching, convulsions and death. This entire sequence would take place within four to six hours. Upon investigating the blood chemistry Mann found that following excision of the liver the blood sugar fell rapidly. When it reached 75 or 80 mg. (or 20 to 25 mg. below normal), the dog would become weak; when it fell to 50 or 60, the dog would fall and sprawl; when it fell to 30 or 40, twitchings and generalized convulsions soon followed; and at 20 mg. the dog would become comatose and die. Mann then performed an experimental miracle. By taking a syringe full of glucose solution and injecting it into a comatose dog's jugular vein the dog would become conscious and return again to "laboratory normal" as previously described for a short period until he had used up the injected glucose. The same sequence of events would then follow, but with each successive injection of sugar the

[1] Presented before the Philadelphia Dietetic Association, April 11, 1939.

dog would revive for shorter periods, and ultimately could not live longer than 30–36 hours.

This was a revolutionary experiment as heretofore the pancreas had been considered the dominant organ in maintaining carbohydrate metabolism. Mann next removed the pancreas and found that a dog so deprived would survive for several months. If, however, he removed the liver following pancreatectomy, the dog would promptly die or could not be so easily revived with injections of glucose.

These experiments revolutionized all intra-abdominal surgery, especially surgery in or around the liver. Previously we had noted that many patients would do exceptionally well for the first few days after operation and then on the fourth, fifth or sixth day would suddenly manifest symptoms similar to those of the hepatectomized dog. This can now be prevented by building up the patient's glycogen reserve by intravenous injections of 25 to 50 gm. glucose before operation, again at the operating table, and daily thereafter for perhaps the first week. Fortunately the liver has a tremendous margin of reserve and can usually recover from most injuries.

Mann continued his experiments and found that he could remove all the liver save a small portion about the size of a golf ball and a dog would survive, recover its health and several months later on reoperation would be found to have grown from the remaining small portion of liver tissue, a liver nearly as large as he originally possessed.

It is now well known that in treating the diseased liver a high carbohydrate diet is essential, and that protein and fat should be greatly reduced. This belief followed Mann's finding that after experimental cirrhosis of the liver in dogs, he could produce ascites, one of the terminal complications of cirrhosis of the liver, by increasing the protein in the diet. He could also decrease the ascites by reducing protein and increasing the carbohydrate. Older views are superseded by newer ones, however, and today Dr. Ravdin, professor of surgical research at the University of Pennsylvania, asserts that 10 to 20 per cent of the total diet should consist of protein which will further aid the high carbohydrate diet in protecting the liver.

Many times the pathologist at autopsy has shown that there is extensive fatty degeneration of the liver cells. Therefore in the diet therapy of the liver the carbohydrate should be high, the proteins reduced and the fats excluded as far as possible. Ravdin now feels that the most suitable diet should consist of 80 to 90 per cent carbohydrate, 10 to 20 per cent protein and no fat save the approximate 5 per cent which is included in the quota of carbohydrate and protein.

We have also learned much concerning the gallbladder and its function. Prior to 1917, the surgeon felt that the gallbladder, like the appendix, had no function and as a vestigial organ it could be removed with impunity. It was true that a gallbaldder with thick and often infected walls and containing gallstones, and frequently bound down with adhesions, was a functionless organ. Its removal also protected a disturbed liver, a myocardially damaged heart and kidneys suffering from some degree of nephritis, toxic or otherwise. Such patients after drainage or removal of

the gallbladder would also show very gratifying clinical improvement.

Since the introduction of duodenobiliary drainage in 1917 and the Graham cholecystographic x-ray method in 1922, and since the observations of Bollman, Whitaker, Higgins and Mann in 1923 and subsequently the observations of Ravdin and his associates, we have learned that the gallbladder not only has a function but that it has several functions. I will attempt to emphasize chiefly the relation between the diet and the gallbladder emptying function.

For many years we had believed that the bile itself had no digestive properties such as are possessed by the specific gastric, pancreatic and duodenal enzymes. But we now know that the bile does act as an important adjuvant in assisting the pancreatic lipase in the digestion of fats through a series of chemical changes, breaking down neutral fats into fatty acid crystals, glycerols, and ultimately soaps. Clinically we surmised this many years ago in observing the jaundiced patient. No bile would enter the duodenum, and as a result there were copious fatty stools since the pancreatic lipase alone was insufficient for complete fat digestion. When bile was added the clinical picture improved. Today in all jaundiced patients it is axiomatic that the diet should be fat-free or fat-low.

The biliary system can be compared to the renal system. In the latter we have a pair of kidneys which constantly, day and night, secrete and excrete a fluid called urine which is carried from each kidney by means of the ureters and empties into the urinary bladder. Here it is emptied only at intervals and at will since the outlet of the bladder is guarded by a voluntary muscle. Similarly, in the biliary system the liver constantly manufactures and secretes a fluid called bile which trickles down the right and left hepatic ducts into the common bile duct and finally empties into the duodenum. But the bile, while secreted constantly, is not constantly discharged into the duodenum. The sphincter of Oddi, similar to the sphincter urinae, is at the bile-duct outlet. When this sphincter muscle is closed, bile does not pass into the duodenum but flows into the normal gallbladder which acts as a reservoir for bile, just as the urinary bladder acts as a reservoir for urine.

Now, while the daily secretion of urine normally approximates 2000 to 2500 cc., and although we have more recently learned that the total amount of bile secreted in 24 hours approximates 1800 to 2000 cc., almost tripling the figures thought to have been correct thirty years ago, we find this difference: namely, that the urinary bladder has a capacity of 500 cc. with patients normally voiding four to five times in 24 hours, whereas the gallbladder, that small sac tucked up under the liver, has a normal capacity of but approximately 50 to 75 cc. Yet it has to store the large quantity of bile secreted in 24 hours.

How can this be done? Again there is a difference. The musculature of the urinary bladder is composed of striped or voluntary muscle; thus when the urinary bladder becomes over-distended, the urinary sphincter may be relaxed at will and the bladder emptied. The muscles of the gallbladder, however, are unstriped or involuntary muscle, and cannot signal to the brain when

over-distended with bile. Sometimes there may be a sense of discomfort or fulness under the right costal margin because of gallbladder distention, somewhat like the discomfort due to over-distention of the urinary bladder. But we have no power voluntarily to relax Oddi's sphincter and allow bile to flow into the duodenum.

There are two other considerations: first, how can a gallbladder with a capacity of only two to two and one-half ounces serve as a storage vessel for a quart to two quarts of bile? Peyton Rous of the Rockefeller Institute solved this question nearly twenty years ago by proving that one of the functions of the gallbladder was the ability to concentrate nine to ten times the volume of liver bile. Thus, in a normally functioning gallbladder 75 cc. of bile in the gallbladder represents approximately one and one-half pints of liver bile.

This explains why the surgeon or pathologist finds gallbladder bile much thicker and darker than bile coming from the liver. Freshly secreted liver bile is light lemon-yellow and that from a normal gallbladder, a dark golden molasses color. In pathological conditions, bile is sometimes as black and thick as tar.

What is the mechanism by which the gallbladder discharges its stored bile into the duodenum? Since 1923 we have known that the gallbladder empties itself as a result of selective food stimuli. The foods which do this best are the fats, and to a less extent, animal protein (chiefly meat) when converted into peptones by the gastric juice. Therefore a high fat diet should be ordered if drainage of the gallbladder by food stimulus is to be secured.

In many gallbladder patients referred to me I have found that this fundamental principle has been previously disregarded, and too often the patient has been put on a fat-free or fat-low diet which merely results in "splinting" the gallbladder, thus producing or increasing gallbladder stasis, and making a bad situation worse. I believe this is wrong. Of course we find gallbladders and bile ducts with the mucous membrane so inflamed that the patient's pain or discomfort is temporarily increased when the gallbladder (and the excretory duct) is forced to contract. But if this is allayed by antispasmodics and sedative medicines and by drainage by duodenal tube, I have found in most cases properly selected for *medical* management that this painful phase is not a prolonged one. In subacute cholecystitis where pain following fat foods is too severe, then "splinting" the gallbladder by a fat-free diet to secure physiological rest is desirable as a temporary measure.

The best fats are the simple ones: butter, cream, olive oil of good quality, bacon, the yolk of a soft cooked egg, and occasionally, ice cream. But all of these should be taken in small graduated amounts until the patient's fat intolerance subsides and gallbladder drainage response becomes more normal as indicated by cholecystograms. Three or four moderate sized meals a day at regular intervals and containing some fat, are indicated. One or two teaspoons of olive oil with two or three buttered crackers at bedtime may substitute as the fourth meal. Protein, starch, carbohydrate, mineral and vitamin values

can be kept at the average unless there is definite contraindication for increases or decreases. If the blood cholesterol is too high then a low cholesterol diet is indicated.

Naturally, one should *not* use a fat food stimulus in gallbladders with stones, especially small stones, for this is apt to produce biliary colic by forcing stones into the neck of the gallbladder as the gallbladder contracts, or into the cystic or common duct where they may impact. But this type of gallbladder requires surgical rather than medical management except in the old, debilitated or poor operative risk patient with gallbladder emptying function absent or greatly reduced, where "splinting" the gallbladder by a fat and peptone-free diet will often be followed by lessened mucous membrane irritation, subsiding inflammation and lessened pain. I have many such patients who have lived in comfort with quiescent stones and no recurrence of colic. If colic persists, we should then insist on operation.

To my view, these are the underlying principles in gallbladder dietetics. If the liver, pancreas, the hemapoietic system or the gastro-intestinal tract, and notably the colon, are involved, I should have to discuss the dietetic problem from an entirely different aspect and in greater detail. But these remarks are primarily concerned with the medical management of cholecystitis alone. However, if the liver is diseased I rely upon a high carbohydrate diet which helps to protect the liver and repairs liver damage; a non-toxic bile salt; mild laxative and alkaline waters of the American and European spas; and duodenal tube drainage of the liver provided there are no gallstones.

THE NUTRITION EDUCATION of the student nurse, dietitian, and medical student as well as that of the patient, is also one of the major functions of the [dietary] department. Today, as never before, we recognize the need for community education in nutrition and its relation to preventive medicine in helping to create strong, healthy people. It is the general practice in the majority of hospitals for student nurses and dietitians to have training in the preparation and delivery of food to the patient. They must also be taught to realize that the viewpoint of the sick individual is quite different from that of the well individual and this must be kept in mind in any service to the patient. There are many avenues of research open to the dietitian other than in the field of nutrition. Personnel management, food costs, equipment and supplies, each present worth while problems, and time should be permitted for the development of these important angles of the work.—*Park, R. M., Unification of administration and control of food service under the dietary department, Hospitals, March, 1940.*

EDITORIAL

LAST CALL FOR THE ANNUAL MEETING

"Come to the Fair" may be a line from an Irish ballad but on Sunday, October 20, it will be "Dietitians, come to the World's Fair in Flushing Meadows." For this has been officially designated as American Dietetic Association Day at the Fair, writes Eleanora Sense of the local committee.

After picking up your badge on Sunday at the Hotel Pennsylvania (your badge is necessary for the tea), you will take the Long Island train or Eighth Avenue subway across the street from the hotel. If you use the west exit doors of the hotel you'll be headed in the right direction. After a thirty-minute ride or so, the exotic buildings of the Fair will loom into view. Wander about the Fair grounds, see the Maritime Transport and Communications Building, the scientific exhibits in the Medicine and Public Health Building. An unprecedented collection of art is also at the Fair. One exhibit has been collected by the International Business Machines Corporation and shows canvases from every state. The second art collection is in the Masterpieces of Art Pavilion where superb paintings loaned from private and public collections are shown. In a lifetime, perhaps such collections will not be assembled again. Wander through the galleries and be inspired by the classicists, David, Gérard, Gros, Prud'hon, and Ingres or see the works of the romanticists or of the popular Corot, Millet, Degas, Manet, Renoir and Van Gogh. Spend thirty minutes or several hours, but do see the art collections.

When foot-sore and weary, rest yourself in the National Advisory Committees Building and have a cup of tea. This redwood structure surrounds a garden of gold and blue flowers against a background of topiary hedges. Facing the garden is the Garden Room restaurant and the spacious lounge graced by a large needlework portrait of Washington. The chintzes, chair coverings and vases carry out designs from the portrait. The New York State Dietetic Association and New Jersey Dietetic Association are hostesses for the tea.

You have saved the foreign pavilions for a dinner excursion. Whether it be the Rumanian Building, the Swiss, French, Swedish or any of the others, enjoy the typical food of the country served in quiet surroundings far from the turmoil of war. At nine o'clock seek a vantage point to watch the fountain display, as the water dances in color to a special symphonic arrangement.

Later, the midway may beckon with its bright, sparkling lights and gay entertainment. Yes . . . it will be dietitian's day at the Fair.

Monday morning the convention program opens with a welcome from President Beula Becker Marble. From then on a program full of interesting lectures, educational trips and vitalizing information is in store for you. Taste "What America Eats." Hear what part dietitians can take in the defense program. See the advances in science at the exhibits and clinics. Come to the Fair and stay for the week of October 20.

PERSONNEL MANAGEMENT[1]

Since the term "personnel" may be defined as "the body of persons employed in any work, undertaking or service", it follows that personal relationships figure largely in personnel work. The term, "personnel director", is often applied to the person who engages employees, when in fact this is only one phase of the work. Such responsibilities involve the distribution of available funds equitably among employees so that they may have an incentive to effective work and the business may operate without too high labor costs. It involves making those adjustments which give workers a contentment in their jobs not necessarily related to salary or wages. We may think we have done a good personnel job when we place the right person on the job, pay him properly, keep him reasonably happy, and make him feel that he is a real part of the organization. But other factors over which we may exercise no immediate control, such as poor home conditions, money difficulties, or sickness, may necessitate attention as well.

The dietitian's personnel problems may concern a superior who needs to be convinced, cooks who "know better", heavy-handed waitresses, or careless dishwashers. As an executive, the effectiveness of her work depends largely upon the cooperation of others.

There are two cardinal rules in human relationships which bear emphasis: keep a detached, almost an impersonal point of view in your work. Don't assume that every bit of opposition, every instance of lack of cooperation, is directed at you personally. Whether it be concerned with the public, one's superior officer, or employees, develop a habit of viewing impersonally every difficult situation. Perhaps the most potent ingredient of this quality of detachment is a sense of humor, for only those who possess it can impersonally consider themselves in relation to others. The second of these rules is: don't take on more than you can do. Women too frequently disregard their limitations. They need to develop a sense of values and then set up their program within reasonable limits of time and endurance. In doing this, make an allowance for an avocation—a recreation and a relief from the regular job.

Authority and responsibility go hand in hand. The wise executive will see that she does not assume responsibility without having authority to go with it. In other words, if you have a group of employees for whose time and work you alone are responsible, you must have authority to direct their work. In all supervision, the training, planning, discipline and evaluating of individuals are primary obligations. After selecting the employee who seems best qualified to do the job, leave him in no doubt as to what is expected of him, not only the duties but the standards to be maintained. That time-honored alibi, "I didn't know", will then be irrelevant. When a change in assignment, routine, or schedule has to be made, one can forestall almost all probable dissatisfaction by explaining in advance what necessitates the change, for the employee will naturally mistrust what he does not understand.

[1] Abstract of paper by Louise M. Newman, Personnel Manager, The Northwestern Life Insurance Company, Milwaukee, read before the Milwaukee Dietetic Association, Milwaukee, November 1, 1939.

The evaluating of employees entails the setting of standards of performance for each employee, and from time to time evaluating or rating them according to this yardstick. When questions of salary increase or promotion arise, evidence is then available upon which to base a decision. Personnel relationships extend both up and down from your own job. And one thing above all others must be remembered in managing people—the better the employee understands his superior, the more amenable he will be toward suggestions.

CURRENT COMMENT

FIELD WORK IN SOCIAL SERVICE FOR THE STUDENT DIETITIAN

JOSEPHINE G. TAYLOR AND MARTHA WARNE

In February 1938 the Social Service Department and Dietary Department of Cook County Hospital instituted a joint course for student dietitians as a part of the student's work in the nutrition clinic. The objectives of this course are to make the student dietitian aware of all the factors, medical and social, that enter into the patient's ability or willingness to follow the diet ordered for him, and to allow the student to follow the plan of treatment from the hospital into the home. The course informs the student dietitian regarding the function of the medical social worker and how to work with her in caring for the patient.

The course is planned to give the student opportunity to apply the knowledge gained from her social service experience while still working in the outpatient department. The length of the combined service is six weeks, the first two weeks of which are spent in the nutrition clinic, learning the methods and problems of instructing the patient concerning his diet. The student is taught how to take the patient's history so that she knows, before attempting to plan the diet, the nationality, occupation, economic and social status, and food habits of the patient. Since the student comes to the nutrition clinic late in her training, and after she has had her work in diet therapy and nutrition, the work in the clinic permits her to apply this knowledge in teaching patients to follow diet instructions in their homes.

The next two weeks are spent in the social service department. The student dietitian has previously become acquainted with the social service department early in her training, as the director of that department gives one lecture in the orientation course for student dietitians in which she discusses the origins of medical social work, its present philosophy, definitions, and functions, and the organization of the department. This knowledge of the place of the medical social worker in the hospital "team" prepares the student for training by the social worker.

In the social service department the student is assigned to a social worker who is her supervisor. On the first day she reads records of patients who have dietary problems and observes her supervisor as she visits the wards, receives referrals, interviews patients and confers with physicians. On the second day, the student visits the home of a patient with a simple diet problem and

later is given more complex cases as her familiarity with the work of the department increases. The student confers with the ward dietitian on diet instructions, if the patient is a house case, or with the clinic dietitian if a clinic patient. The background of the case is given to the student by the social worker who refers the case. The student is also given an outline to follow in writing up her calls, the technic of which is discussed by the supervisor and the student is asked to explain why she thinks certain points have been considered important and therefore included. This procedure is intended to demonstrate the flexibility of the outline, and that its use will serve as a guide to the student in determining the factors which are important in the dietary adjustment of each patient. Points included in the outline are: the reason for the visit; the home situation, including family make-up and relationships, housing and equipment, and financial arrangements; and attitudes of the patient and his family toward illness, treatment and diet.

After her visit the student confers with the supervisor on her findings, their social implications and what she has accomplished during her visit in the way of interpretation and demonstration. The student then writes up her visit and goes over the material with the worker who has referred the case. Second and third visits are made if need for further teaching is indicated. The student may arrange to have patients come to see her in the nutrition clinic during the next two weeks so that she may supplement the teaching done in the home. These later visits often show what factors impede progress and overcome the student's tendency to feel that everything has been accomplished in one visit.

Some patients who are not primarily social service cases are referred for visits from the ward or clinic dietitians. If the student later finds social problems which affect or are affected by the patient's illness she may, after conferring with her supervisor, refer the case to the proper social worker in the department. It is hoped that this will make the student alert to her responsibility to watch for social problems and to refer cases when she returns to the ward.

The student dietitian then returns to the nutrition clinic for her final two weeks of this service. She should now be prepared to apply her knowledge of methods learned in her first two weeks in the clinic in the light of the added experience gained during her social work. Thus trained, she should have an added awareness of the patient's family and social background and be able to see him as part of that background rather than as an individual with a specific disease.

A case study, that of nine-year-old Alex with a diagnosis of rheumatic fever with endocarditis, will serve to illustrate the working of this teaching plan. Alex, one of six children in a Polish family, was referred to the children's cardiac clinic where the doctor, in turn, referred him to the nutrition clinic for a high vitamin and high caloric diet. At the time, Alex's family was on relief.

While a nutrition history was being taken it was found that the boy's mother had no knowledge of a normal diet. She was resistant to teaching and inclined to blame all inadequacies of diet on the financial condition of the family. Because of this attitude it was deemed wise to proceed slowly so as to gain the mother's confidence. The mother was taught, in the clinic, the essential foods for a normal diet. Later, a student

dietitian, who had been given the social background by the social worker, went to call on the family. The student continued the teaching of the diet for Alex and with the mother, worked out a budget in order to demonstrate how an adequate diet for the whole family might be obtained. The interest in the family as a unit and the working out of plans, together, changed the attitude of the mother so that she was willing to accept suggestions. On each clinic visit the mother and Alex came voluntarily to the nutrition clinic to discuss the diet and a check of the food eaten showed a marked improvement in the food habits of the child. The mother was made to feel that she could come to the social worker or the dietitian at any time with problems concerning herself and her family as well as those concerning Alex.

This case illustrates how the student dietitian under the direction of the social service department learns to plan her teaching so as to include the whole family and the social background. It demonstrates the close interrelation of the dietary and social problems and how the attitude of the patient and his family toward diet may be influenced by taking the social factors into consideration.

Certain results observed and conclusions reached confirm the original belief that this service has been advisable and purposeful. The quality of teaching by the student dietitian has been improved. She has learned that oral and written instructions to the patient do not guarantee that the diet will be followed. She is more aware of the factors that impede progress and as a result these have been considered in her teaching. The student dietitians refer more cases to the social workers after their training in the social service department. Of interest, too, is the greater cognizance of the function of the social service department which has carried over to the graduate, dietitian members of the staff who have referred more cases. Obviously, this training service, in which the two departments work together, has strengthened the students' awareness of the team-work relationships in the hospital and improved their skill in performing their rôle in the team. As a result, the patients themselves have shown greater interest in their treatment and more willingness to come to the workers with their problems.

SOCIAL SERVICE IN THE FOOD CLINIC

DOROTHY DUCKLES

Six months ago, a part-time social worker was added to the staff of the Food Clinic of the Massachusetts General Hospital. She spends two days weekly in the Food Clinic, supervising the social service training of the student dietitians and making investigations regarding the use of a special fund provided to assist patients who cannot afford to carry out their dietary prescription without a special food order. These two functions are definitely interrelated. The cases assigned to the students are patients needing dietary instructions and follow-up who frequently receive aid from the special fund.

The student discusses the problem with the social worker before she makes her home visit, gets essential facts from the medical record, checks the prescribed diet with the dietitian, and finally outlines briefly the purpose of the visit with the social worker. This experience is valuable to the student since it clarifies the purpose of visiting, teaches her to think the total problem through, demon-

strates her rôle in the whole treatment plan, and gives her assurance in her approach. On her return from each home visit, the student discusses the results with the social worker with special emphasis on observations, ability to make a satisfactory contact with the patient or the family, and her opinion as to the best future plan. Financial and budgetary facts are investigated by the student, and factors which color the patient's attitude are considered.

The social worker accompanies the student on at least one visit, preferably the first one. At this time technic can be observed. Also, the pooling of impressions and plans enables the student to develop an ability to use better judgment.

After a six months' experimental period, the above plan of incorporating social service in the Food Clinic has been approved as the most satisfactory method of attaining desired standards for the social service training of the student dietitian. There is an increasing demand for dietitians in the field of public health and in clinic work. It is hoped, therefore, that the additional instruction and experience now available at the Massachusetts General Hospital will enable graduates of the course to be better prepared for the responsibility of such positions.

THE DIETITIAN AS A COMMUNITY EDUCATOR

EFFIE MAY WINGER

The Rochester Dietetic Association feels especially proud of the recognition it receives from the Monroe County Medical Society. Under their sponsorship for the past three years we have given a series of radio broadcasts.

Last winter, Dr. John R. Williams, museum director of the Academy of Medicine, approached the local association with the request that they prepare an exhibit for the museum. Gwendolyn Craver of the Genesee Hospital was appointed chairman of a committee to work with Dr. Williams. This exhibit was completed for the opening of the state dietetic convention held at the Academy of Medicine, May 2–3 and was open to the public during the entire month of May.

The exhibit had a double purpose: to show the history of dietetics, and the scope of the present-day field of nutrition. As one entered the museum at the academy the first three sections of the room portrayed the evolution of the service of food. One section showed wooden utensils used in the early days and later discarded because they were unsanitary and likely to cause epidemics. This was followed by the pewter "age" whose utensils also had to be discarded because they often caused lead poisoning. China was then introduced and proved to be both sanitary and aesthetic. The next section showed a modern, immaculate and well-appointed dining room with a family of life-sized figures about to sit down to a nutritious dinner. The third section showed an unsanitary, slovenly, combination kitchen-dining room, also with a family of life-sized figures about to sit down in a haphazard manner, to unappetizing food.

The rest of the museum was devoted to exhibits showing the scope of the present-day field of nutrition. The work of the dietitian in the Department of Public Welfare and hospital clinics was shown in a graphic manner. Economical buying to provide adequate

nutrition for a family of five was illustrated by showing the greater amount of bulk foods in comparison to packaged food that could be bought for the same sum.

Another display showed the work of the therapeutic dietitian in the hospital. Posters demonstrated that the therapeutic diet, sometimes erroneously termed a special diet, is merely a modification of the normal diet.

Other posters were devoted specifically to diabetes, including accurate illustrations of the amount of carbohydrate in many foods used every day.

The Board of Education, through the dietitian in the public schools, illustrated their activities by posters made by the children to demonstrate good nutritional habits.

Autographed pictures of thirteen outstanding members of the American Dietetic Association and one English nutritionist who have made notable contributions to the development of the science of nutrition, completed the exhibit.

TEACHING NUTRITION IN THE CLASSROOM AND LUNCHROOM[1]

GLADYS WYCKOFF

That all people in our nation should be well fed has long been accepted in theory. Individuals and groups within the professional areas of dietetics and home economics have often assumed, however, that they could not do much to put this theory into practice outside of their conventional and routine work. Teachers of home economics in the secondary schools have often taught nutrition in the classroom with little knowledge of family income, family food habits, or the activities of other agencies interested in public health. This may partly explain why, as several surveys have shown, food habits of high school students who have studied home economics are no better than those of students in the same school who have not studied home economics. Dietitians have given attention to diets for particular conditions, only to find that the emphasis is shifting from the special diet kitchen to the well-planned daily dietary. Adequate day-by-day dietaries for all the people becomes our goal when we take a broader view of our responsibilities.

We are beginning, at least, to face the fact that in our land of plenty, diets are not nearly so adequate as they should be. The United States Department of Agriculture reports from a cooperative survey in a group of cities considered typical, that one family in ten had a really adequate diet, four had fair diets and five had poor diets. Lack of income is one reason for the poor diet. When, as it is estimated, one-third of the families of the United States have about 55 cents per person per day to spend on everything that is needed to keep body and soul together, the diet is very apt to be lacking in some of the needed foods. Yet sixty-five per cent of these families spent as much as $2.50 per person per week for food—enough to supply adequate food for the ordinary family if care and intelligence are used. However, only ten per cent of these families had good diets. Indifference and ignorance have to answer as well for many of the poor diets of American families.

The emergency school lunchroom proj-

[1] Read before the Virginia Dietetic Association, Virginia Beach, April 26, 1940.

ect has been set up as a worthy means of employing people and of using surplus commodities. It no doubt accomplishes still more in providing one well-balanced, complete meal to many children who are otherwise inadequately fed. According to one survey, Florida ranks first in supplying hot lunches for children who remain at school during the noon hour—here only 26 per cent eat a cold lunch. Virginia ranks a very close second in providing hot lunches for her school children. Throughout the various states the Federal Surplus Commodities Corporation and the Works Progress Administration are providing food and workers so that hot lunches may be served to all children regardless of whether or not they can contribute to the cost. The Federal Surplus Commodities Corporation is supplying food for 3,000,000 children in lunchrooms and the Works Progress Administration is providing 30,000 lunchroom workers. Where a state such as Virginia considers the school lunch of vital significance to the health of the children, home economists and dietitians are also provided as supervisors for the school lunch program. According to the Works Progress Administration office in Washington, Virginia has an excellent handbook on sanitation, menus, and management for the school lunchroom. That the school lunch offers many opportunities for teaching nutrition is generally conceded, yet only one-fourth of the teachers of home economics who replied to a questionnaire from the United States Office of Education said they used the school lunchroom as a teaching situation.

The school lunch program is only one part of the problem. There are other meals during the day and there are many people besides school children who are not well fed. All youths and adults need to know how to choose food so they may have a chance for buoyant health instead of just "starving along." Everyone knows it takes more money and better planning to have a good diet than it does to have our average diet. The United States Department of Agriculture's new Year Book *Food and Life* gives the latest findings about food and nutrition. "You have to use your brain to get enough calcium in your backbone" is an illustration of the popular form in which the information is phrased. The section of this book devoted to human nutrition can be obtained from the Superintendent of Documents, Washington, D. C., for 40 cents. It should prove very helpful in interpreting food requirements to the public—especially when the public tends to become bewildered by constant change and too detailed technical information.

Besides this need for more widespread information on the importance of a good diet and how to obtain it on various income levels, there are problems concerned with distribution of food. How shall the public interpret the advertising of vitamin concentrates? What shall be their response to the "eat more" campaigns? Shall chain stores be regulated by taxation? Who shall take the time and make the effort to appear for hearings on food definitions being set up by the Food and Drug Administration? What progress is being made with grade labeling of foods? Shall products be allowed to flow freely in interstate commerce or shall state trade barriers continue to develop? How does the

stamp plan for distribution of surplus commodities operate?

One individual alone can do little about these widespread problems. If those trained in dietetics and home economics in a given city or county met together regularly to see what their whole community—rich and poor—needed in the way of information, stimulation, and resources for good food, one can scarcely predict how far the results might reach. These professional people would, no doubt, soon join with other groups to form community councils to see what was needed other than food. Some 400 of these community councils have sprung up over the United States almost spontaneously. In the beginning, they are usually concerned chiefly with the welfare of children, but it is easy to see why many other problems are soon included in such a community program.

And so the teaching of nutrition cannot remain an isolated concern of the classroom, tea-room, restaurant, or hospital. The teaching cannot be called complete until our nation as a whole enjoys daily meals that more nearly meet our standards of adequacy.

Principles of Therapy for Deficiency Diseases

General Therapy.—The following general principles of therapy are applicable to all deficiency diseases: Each patient must be considered as an individual problem and treatment prescribed accordingly. A well balanced diet of 4,500 calories, rich in protein, minerals and vitamins, should be eaten each day. The type of food, the mode of administration and the time and frequency of feeding in the more severe cases are dependent on the patient's condition and on his ability to tolerate food. Complete reliance on dietary therapy, however, is not recommended, for the necessary protective substances are present in too small amounts to be effective in cases of well developed deficiency diseases. Furthermore, persons of the lower income group who are most frequently affected by nutritional diseases cannot afford to buy the relatively expensive foods rich in vitamins and protein. Specific therapeutic agents, then, should be given as supplements to a well balanced diet. In the very severe case hospitalization is advisable, for the combined services of a physician, nurse and dietitian are essential. The patient should be kept at complete rest in bed until convalescence is well established. If for any reason the food requirement is increased, efforts must be made to eliminate the cause. Appropriate symptomatic therapy and treatment of coexistent diseases are of course desirable. Treatment in all cases should be based on all the clinical evidence available. —*Spies, T. D., Hightower, D. P., and Hubbard, L. H., Some recent advances in vitamin therapy, J. A. M. A., 115: 292, 1940.*

BOOK REVIEWS

Obesity and Leanness. By Hugo R. Rony, M.D. Philadelphia: Lea & Febiger, 1940, pp. 300. Price $3.75.

This is a scholarly discussion of a subject which has been replete with interest in recent years. While many individual papers have appeared in the scientific literature, according to the author no comprehensive presentation of the subject has appeared since von Noorden's monograph on obesity in 1900. Then, obesity was looked upon solely as a disturbance of caloric balance; primary leanness was not recognized as a pathological entity. Today, certain aspects of the problem touch the fields of endocrinology, neurology, intermediary metabolism, cell physiology and genetics. Thus the problem is one which calls for an analysis of the various aspects and a clarification of these based upon an ordered concept of the whole subject.

The concept of obesity and primary leanness as disturbances of a homeostatic body weight regulatory mechanism has been investigated by the author and its applicability demonstrated to questions of classification. The introductory chapters concern the physiology of fats and fat tissue. Then follows the pathogenesis of obesity and leanness: the caloric balance, the endocrine system, the nervous system, intermediary metabolism, lipophilia, heredity, and a résumé of the homeostatic body weight regulation. The third section concerns the clinical aspects of obesity and leanness in relation to classification and diagnosis, clinical pathology, and therapy.

The dietitian and the physician, especially those with a good foundation in physiology and related sciences, will find the book an excellent reference text and of very practical value. In fact, every physician or dietitian, whether teacher, student or practitioner, will find this an indispensable source of data on that ever-present problem, obesity and leanness.

Prescription for Slimming. By Ida Jean Kain. Philadelphia: David McKay Company, 1940, pp. 276. Price $2.50.

Ida Jean Kain, whose syndicated column, "Your Figure, Madame!" appears in a number of newspapers, is unusually well qualified to write on her chosen subject. She is a dietitian and possesses a master's degree in health education from Columbia University. Faithful adherence to her rules for reducing should dispel the dowager hump, the midsection sag and the middle-age spread. And as Miss Kain makes clear, the results transcend the merely aesthetic, for a good posture and figure and just enough adipose padding mean better health and a sense of well-being. When you take on twenty pounds of excess poundage, you have given yourself a burden equivalent to carrying a twenty-pound bag of cement—in reality you give "the best years of your life to avoirdupois."

Miss Kain adds a note of caution against overdieting—your aim should be streamlines, not string lines. For some, poor posture and low vitality may call for more rather than less weight. In any event she sagely advises that you "see your doctor first" before attempting either reduction or gain in weight. The author's training in health education has enabled her to present excellent discussions and diagrams of exercises designed to subdue the too billowing curve and to outbreast even the Balinese.

Miss Kain's book is one that even the dietitian, weary of diets, will read with avidity and find helpful in many phases of her therapeutic work. The "progressive slimming menus" and the calorie chart, the carefully calculated menus for the too-thin, and the sound advice concerning food fads, quack reducing devices, and the calories lurking in the highball, all make the book the most well-rounded discussion of the subject to date.

Feeding the Family. By Mary Swartz Rose. Fourth edition. New York: The Macmillan Company, 1940, pp. 421. Price $5.

The teachings of Mary Swartz Rose have reached through the length and breadth of these United States and to other lands. More than anyone else, perhaps, she has epitomized the meaning of good nutrition in terms understandable to all. No one has been able to make the science of nutrition more graphic and practical than Mrs. Rose. Her book under review, first published in 1916, now in its fourth edition, is a classic and still the most well-rounded and practical treatise available on the essentials of the adequate diet for the family group. Through successive editions, her book has served to span that quarter of a century during

which good nutrition has become a meaningful term to all thinking people.

In this edition increased emphasis has been placed on the routine use of recognized food sources of thiamin and ascorbic acid. In the dietaries those foods have been indicated which contribute significant amounts of the above factors as well as riboflavin and vitamin A.

A new section on allergy has been added to the chapter on feeding the sick. A new table entitled, "Nutritive Value of Foods", giving protein, calcium, phosphorus and iron values of portions commonly served and their vitamin values in International and Sherman-Bourquin units, replaces the table of 100-calorie portions and that on vitamin values in the previous edition. Several new illustrations are included.

Career as a Home Economist in the Food Field. The Institute for Research, 537 South Dearborn Street, Chicago. Price $1.

This publication is one of a series of vocational studies. It contains information of interest to the home economics student uncertain in what line to specialize, which might help her to make a decision.

The listing of requirements for a college course as set up by the American Dietetic Association would lead one to believe that these courses are desirable for all types of positions discussed in this book. As a matter of fact, many journalists in magazine and newspaper fields, home economists in advertising and sales promotion work, and food specialists employed by food and equipment manufacturers do not have this background and have found other college majors more useful. Comparatively few of the members of the Home Economics Women in Business, who represent the leaders in the above type of work, have been hospital dietitians or have specialized in dietetics.

The outline of a day's activities and the probable salary range in different lines are of real value to students making a choice of vocations and to anyone considering a change from one field to another—MARY I. BARBER, *Kellogg Company, Battle Creek, Michigan.*

The Blood Picture in Hemorrhagic Anemia. By Jane M. Leichsenring and Alice Biester, Division of Home Economics, University of Minnesota. Published by the University Agricultural Experiment Station, 1939, pp. 120.

This bulletin covers a comprehensive study of blood changes occurring in hemorrhagic anemia induced in dogs maintained on a synthetic diet. A comparison is drawn between the blood picture observed in this experimental anemia and that noted in idiopathic hypochromic anemia. Statistically established interrelationships among certain of the variables are discussed.

The implications of the similarities between idiopathic, hypochromic anemia and hemorrhagic anemia are considered. The anemia induced by hemorrhages, uncomplicated by nutritional deficiencies, pregnancy, lactation, menstruation, or infections, is of the hypochromic microcytic type.

The Philadelphia Cook Book of Town and Country. By Anna Wetherill Reed. Decorations by Filby Edmunds. New York: M. Barrows and Company, Inc., 1940, pp. 346. Price $2.50.

One of the most praiseworthy features of this book of famous old and new Philadelphia recipes is the series of 36 seasonable menus bearing perhaps unnecessarily delimiting titles as "dinner for a well-to-do bachelor uncle", "a luncheon before the spring races", and a "supper after the opera." The author includes the appropriate wine accompaniments and her menus have an exquisite simplicity which should do much to refute the idea that women lack aesthetic discernment in planning menu combinations.

The fowl, game and meat recipes are well worth perusal. Many of the vegetable recipes, too, would be viewed with especial favor by the busy dietitian seeking menu variety. The following, quoted from the chapter on desserts, deserves mention: "Desserts and sweets are like the ruffles used on old Colonial costumes and like all other trimmings must be used with restraint to avoid spoiling the effect of the whole. A simple meal may end with an elaborate dessert, but if a meal itself is elaborate the dessert should give way to the cheese and salad course or to a light and attractive dish of fruit."

Ruth Wakefield's Toll House Tried and True Recipes. By Ruth Graves Wakefield. New York: M. Barrows & Company, Inc., 1940, pp. 275. Price $2.50.

This is the new, completely revised and enlarged edition of a cook book written by perhaps

the most notably successful dietitian owner-manager of a restaurant. The Toll House in Whitman, Massachusetts, is one of the finest restaurants in the United States, serving one to two thousand guests daily. If Mrs. Wakefield has a rule for catering that pleases, it is this: she still believes in small quantity cookery for best results in flavor, consistency and general quality, especially in baking; and there are no substitutes for butter, cream, eggs, and fresh fruits and vegetables in preparing a good meal.

Her recipes have a highly individual character, yet are simple and arranged in a form which can be readily followed. Charming illustrations in color and black and white, a number of interesting menus, culinary hints and tables, and excellent suggestions in menu planning and service, make the book well worth its price.

Around the World Making Cookies. By Josephine Perry. New York: M. Barrows & Company, Inc., 1940, pp. 157. Price $1.50.

According to the dust cover, Miss Perry is a home economist who has written a standard book on household etiquette, also an educator and a lecturer, "but her most vital interest is in food." Thus we have a fascinating little book on cookies and small cakes with nearly 300 recipes gathered from far and near. Many of the recipes carry individual introductory comment such as the "Shrewsbury Cakes", the "Risen Doughnuts", and so on, and many are new and original. Choice offerings of other countries from France to Mexico are included. It is surprising, however, to find the "hunt and find" system in the order of ingredients in recipes assembled by a professed home economist.

PREVENTING VITAMIN B DEFICIENCIES

The use of undermilled rather than overmilled grains should be rigidly enforced among government troops and in prisons, asylums and other institutions where mass feeding is required. Each lot of grain purchased should be examined to determine whether there is an adequate amount of the germ and of the external layers of the grain. Since molds, weevils and other infestations deprive cereals of this vitamin, one must be certain that the grain has not spoiled.

Particular attention should be directed toward the diets of persons with chronic debilitating diseases and increased metabolism, for the incidence of vitamin B_1 deficiency is high among such patients. Alcoholic addiction, pellagra, sprue, pernicious anemia, colitis, diabetes mellitus, tuberculosis, senility, malignant tumor, cirrhosis and other diseases may interfere with the proper nutrition of the patient and thus predispose to the development of vitamin B_1 deficiency.—*Aring, C. D., Evans, J. P., and Spies, T. D.: Some clinical neurologic aspects of vitamin B deficiencies, J. A. M. A., Vol. 113: 2105, 1939.*

CURRENT LITERATURE

American Journal of Digestive Diseases

Vol. 7, July 1940

*Digestion and absorption in a man with all but three feet of the small intestine removed surgically. W. R. Todd, M. Dittebrandt, J. R. Montague and E. S. West. —p. 295.

*Xerostomia successfully treated with nicotinic acid. W. Saphir.—p. 298.

*Is the biophotometer reading a true index of the amount of vitamin A in a person's body? Editorial.—p. 300.

DIGESTION WITH THREE FEET OF SMALL INTESTINE. Metabolic studies were conducted on a patient with regional ileitis possessing only three feet of small intestine. Carbohydrates were utilized normally. Proteins were not so well absorbed. More calcium was lost when larger amounts of fats were excreted in the feces. Phosphorus excretion tended to parallel the excretion of calcium. Tetany was obviated only by a very high calcium and vitamin D diet and was controlled more easily with a high carbohydrate-low fat intake.

XEROSTOMIA TREATED WITH NICOTINIC ACID. Xerostomia is a condition characterized by abnormal dryness of the mouth. A marked curative effect was obtained with nicotinic acid in a case of long standing xerostomia. Nicotinic acid deficiency should be included in the etiologic considerations of this condition.

BIOPHOTOMETER READING. Of 8 groups of workers who have reported on the use of the biophotometer, 2 confirmed the findings of Jeans and his associates, 3 gave somewhat qualified confirmation, and 2 of the 3 who did the most extensive and most carefully controlled work concluded that the machine is unreliable and the method of doubtful value.

American Journal of Diseases of Children

Vol. 60, July 1940

*California tall children. O. Lloyd-Jones.—p. 11.

CALIFORNIA TALL CHILDREN. By comparison with existing data it is impossible to evaluate satisfactorily the effects of California environment on growth. Children born in California are taller at every age than those born elsewhere and residing in California, the average superiority being about one-half inch. Among school children 15 years of age and older, over one-half were born outside the state. Data support the theory that the California climate produces fundamental biologic changes in children, causing an increase in height and weight.

American Journal of the Medical Sciences

Vol. 200, July 1940

*The relationship of migraine to hypertension and to hypertension headaches. J. W. Gardner, G. E. Mountain and E. A. Hines.—p. 50.

*Diabetic control versus caloric sufficiency in the treatment of diabetes and pulmonary tuberculosis. H. F. Root.—p. 53.

*Effect of nicotinic acid on peripheral blood flow in man. D. I. Abramson, K. H. Katzenstein and F. A. Senior. —p. 96.

*The utilization of vitamin A added to mineral oil. A. C. Curtis and P. B. Horton.—p. 102.

MIGRAINE AND HYPERTENSION. Migraine occurs approximately 5 times as often in a group of patients with hypertension as in a group of non-hypertensive patients. An individual who has migraine is more likely to experience the hypertension type of headache than one not affected.

DIABETIC CONTROL. In 396 cases of pulmonary tuberculosis in diabetic patients, limitation in calories had less influence than lack of control of the diabetes.

NICOTINIC ACID AND PERIPHERAL BLOOD FLOW. The peripheral vascular effect of nicotinic acid was studied on 15 subjects maintained on well balanced diets. A significant increase in blood flow was generally elicited in the hand and forearm, with only a slight increase in the leg.

VITAMIN A IN MINERAL OIL. Vitamin A in mineral oil produced as good growth in rats as vitamin A in cottonseed oil. A sufficient amount of vitamin A should be taken with or dissolved in mineral oil whenever it is used as a cathartic or food substitute.

Annals of Internal Medicine

Vol. 14, July 1940

*Clinical application of the thiochrome reaction in the study of thiamin deficiency. H. J. Borson.—p. 1.

THIAMIN DEFICIENCY. Subjects taking a diet known to be adequate in thiamin excrete in the urine from 100 to 300 micrograms daily. Eight to 10% of a standard test dose of 0.1 mg. per kg. is excreted, most of the excess being found in the first 5 hours. Moderate deficiencies were noted in patients with thyrotoxicosis despite diets containing fair amounts of "protective foods". In several patients with "neuritis" of unknown cause, significant deficiencies were found. Severe deficiencies were observed in patients with diarrhea, apparently because of inadequate absorption.

Archives of Internal Medicine

Vol. 66, July 1940

Blood. Review of recent literature. R. Isaacs, C. C. Sturgis, F. H. Bethell and M. Goldhamer.—p. 173.
Review of literature on the pituitary body (1938 and 1930). E. H. Rynearson and L. R. Schweiger.—p. 226.

Archives of Pediatrics

Vol. 57, July 1940

End results in the cretin. C. G. Kerley.—p. 432.
*The thin youngster. I. Bram.—p. 448.

THE THIN YOUNGSTER. Undernourishment is not a disease but a symptom of many and varied causes, the chief of which are (a) improper eating habits and (b) poor sleeping habits. A well rested body is usually synonymous with normality of the child as a whole. Psychotherapy must be directed toward educating the thin youngster in the acquisition of normal eating and sleeping habits. Additional causal factors are thyroid and pituitary disturbances, focal infections, nasal obstruction, allergy, intestinal parasites, nervous anorexia, digestive disorders and psychological maladjustment.

British Medical Journal

No. 4148, July 6, 1940

*The function of the food industry. L. H. Lampitt.—p. 22.

No. 4149, July 13, 1940

*The medical treatment of peptic ulcer. E. Spriggs.—p. 39.
*Food and the housewife. V. H. Mottram.—p. 62.

No. 4150, July 20, 1940

*The medical treatment of peptic ulcer. Part II. E. Spriggs.—p. 78.
Effects of a supplement of vitamin B on the growth of infants. M. R. Price.—p. 80.
*The feeding of children. J. C. Spence.—p. 93.

FUNCTION OF FOOD INDUSTRY. In every part of the world the food factory is replacing the domestic kitchen. An outstanding feature of the age is the variety of goods always available. In time of war governments usually insist that more of the whole grain be included in the flour for baking. The proper utilization of milk necessitates an intermediary to transform the surplus milk of the "flush" season into edible goods. Factory procedure for peeling potatoes reduces the waste. In a factory the pith and peel of an orange as well as the juice are utilized. The most economic method from the national viewpoint is the purchase of ready-baked cakes. Mass production, mechanization, and scientific control all combine to reduce waste, whether of materials, fuel, or man power.

PEPTIC ULCER. The most important point in the treatment of gastric ulcer is to ensure complete rest. A neutralizing powder is usually given three times a day after food. The first food is an egg and milk mixture given alternately with olive oil. The diet is increased a little every day or two. A detailed outline is included.

FOOD AND THE HOUSEWIFE. The housewife troubled by rationing should never decrease the supply of milk to her family. Meat loss, owing to rationing, should be replaced by milk, cheese and fish. Vitaminized margarin may replace butter lost due to rationing. One helping a day of raw fruits or vegetables should never be omitted. Canned ones may be used when fresh ones are not available. Some of the white bread should be replaced by whole-meal bread.

MEDICAL TREATMENT OF ULCER. The treatment of peptic ulcer is described in detail. Egg albumin and usually olive oil are taken into the stomach at once with the purpose of binding the gastric acid, lessening its secretion, and soothing the inflamed area. Increases of food are made almost daily, according to progress. Physical and mental rest, suitable medication and diet are discussed.

FEEDING OF CHILDREN. All women who have successfully carried a child and given birth to

it are capable of lactating. The stresses and strains of war are not those which interfere with breast-feeding. Artificial feeding, diet in the second year and diet late in childhood are topics discussed. Throughout childhood 1 pt. of milk should be regarded as the basis of the diet. It is unlikely that food supplies will be so restricted as to cause a general lowering of basic requirements.

Canadian Medical Association Journal

Vol. 43, July 1940

*The effect of temperature on the nutritive qualities of foods. Editorial.—p. 66.

EFFECT OF TEMPERATURE ON FOODS. Vitamin A and carotene show no significant loss under the ordinary conditions of cooking and less from the process of canning. Vitamin B_1 will stand a temperature of 100°C. if the medium is acid or slightly acid. Members of the vitamin B_2 complex are markedly heat resistant but are soluble in water. Vitamin C is most vulnerable; the presence of alkali or copper quickly damages, while removal of oxygen preserves it. Vitamin D is highly resistant to heat. No detrimental effect of any importance is brought about by pasteurization. Quick freezing has merits and is gaining acceptance at a remarkable rate.

Food Research

Vol. 5, January-February 1940

Chromatographic identification and biological evaluation of carotene from mature soybeans. W. C. Sherman.—p. 13.

*Changes in vitamin C content during boiling of turnip greens in various waters in covered and uncovered containers. W. W. Floyd and G. S. Fraps.—p. 33.

Behavior of microorganisms at subfreezing temperatures. I. Freezing redistribution studies. V. H. McFarlane.—p. 43.

Types of organisms surviving in commercially pasteurized citrus juices in Florida. A. J. Nolte and H. W. von Loesecke.—p. 73.

Determination of carotene in fresh and frozen vegetables. I. Carotene content of green snap beans and sweet corn. W. I. Zimmerman, D. K. Tressler and L. A. Maynard.—p. 93.

Vol. 5, March-April 1940

Clostridium Pasteurianum associated with spoilage of an acid canned fruit. C. H. Spiegelberg.—p. 115.

*Influence of sunlight on flavor and ascorbic acid content of milk exposed in three different types of paper containers. J. L. Henderson, D. C. Foord and C. L. Roadhouse.—p. 153.

Comparison of nutritive value of refined coconut oil and butter-fat. R. S. Harris and L. M. Mosher.—p. 177.

*Soybean flour as an emulsifying agent in preparation of salad dressings. B. M. Watts and L. Morse.—p. 197.

Vol. 5, May-June 1940

Variations in ascorbic acid content of grapefruit and oranges from the Rio Grande Valley of Texas. E. Metcalfe, P. Rehn and J. Winters.—p. 233.

Varietal differences in ascorbic acid (vitamin C) content of strawberries. G. H. Satterfield and M. Yarbrough.—p. 241.

Ascorbic acid content of cabbage as influenced by variety, season, and soil fertility. R. C. Burrell, H. D. Brown and V. R. Ebright.—p. 247.

Vitamin B_1 content of eight varieties of beans grown in two localities in Michigan. E. Kelly, K. S. Dietrich and T. Porter.—p. 253.

Influence of age of cow on ascorbic acid content of certified milk. A. D. Holmes, F. Tripp, E. A. Woelffer and G. H. Satterfield.—p. 263.

*Scoring of toast and factors which affect its quality. W. H. Cathcart and E. J. Killen.—p. 307.

VITAMIN C CONTENT OF TURNIP GREENS. Turnip greens (141 samples) contained from 67 to 422 mg. ascorbic acid per 100 gm. and when 50 gm. were cooked in 75 to 200 cc. of water, on an average 88 mg. were in solution and 53 mg. were in the greens per 100 gm. of turnip greens. Losses of total vitamin C under conditions similar to practical cooking ranged from 15.5 to 26.7% on rapid cooking, and from 23.8 to 36.5% on slow cooking. There were lower losses in uncovered enamel, pyrex, or stainless steel vessels when the greens were cooked rapidly, than when they were cooked slowly. The losses were the same (25.3 to 26.9%) when aluminum was used, covered or uncovered. An increase in titratable vitamin C occurred when 2.5 gm. of greens were cooked in 50 ml. of water in covered aluminum vessels, but this increase was probably due to reduction of reversibly oxidized ascorbic acid, which is biologically active.

FLAVOR AND ASCORBIC ACID CONTENT OF MILK IN PAPER CONTAINERS. Three types of paper milk-containers of different paper stocks when compared for protective effects against the flavor production and ascorbic acid destruction caused by exposure to sunlight, exhibited greater protection from the effects of the light rays than did clear glass milk bottles. The container made of thick paper with unbleached or colored inner plies gave complete protection against the flavor defect and nearly complete protection against ascorbic acid destruction. The effect

of sunlight on ascorbic acid destruction was found to be useful as an index of the effect of sunlight on milk flavor.

SOYBEAN FLOUR AS AN EMULSIFYING AGENT. The following formula was used for all of the dressings: cottonseed oil, 105.0 gm.; vinegar (4% acidity) 22.5 gm.; spice mix (64% sugar, 20% salt, 10% mustard, 6% paprika) 7.5 gm.; emulsifying agent, 75.0 gm. Various concentrations of egg white, yolk, and soybean flour were used as emulsifying agents. A Waring mixer was used for the preparation of the dressings, since better emulsions could be obtained with this apparatus than with ordinary electric beaters. Benzine-extracted, undenatured, soybean flour, heated with water, was successfully used as an emulsifying agent in the preparation of salad dressings. The emulsions were less finely dispersed than those prepared from an equal proportion of yolk solids, but were practically identical in droplet size to egg-white emulsions made over the same formula. The relative viscosity of the soybean dressings was much greater than those from either yolk or white, making possible the preparation of inexpensive salad dressings containing a low amount of oil with the soybean flour as the sole emulsifying and thickening agent. The fat-free soybean flour was also used to replace egg white in combination with egg yolk as an emulsifying agent but the characteristic high viscosity of the cooked soybean flour was lost on addition of yolk.

FACTORS AFFECTING QUALITY OF TOAST. In a recent survey of persons living in the city of Seattle and vicinity it was shown that the average individual consumes about 35 to 40% of his bread in the form of toast. The factors which affected the color of the toast are fermentation time, make-up, amount of clear flour in the blend, amount of shortening, sugar, malt, and milk. The character of the crust was affected by the amount of milk, fermentation time, time of proofing and make-up. The character of the toasted surface was affected mainly by such factors as proofing, make-up, and fermentation time. The character of crumb was affected by the amount of milk and the age of bread before toasting. The aroma was affected by amount of sugar, malt, milk, shortening, and clear flour in the blend. The taste was affected by the amount of sugar, malt, milk, and shortening.

Hygeia

Vol. 18, July 1940

*Refinement of food and its effect on our diet. E. M. Koch.—p. 620.
Advice for the diabetic. A. S. Johnson.—p. 624.
*Coffee and similar products.—p. 644.
*Melon time. H. M. Fyler.—p. 647.

EFFECT OF REFINED FOOD. The advent of the machine age has brought about a trend away from the use of fresh or "whole" foods. Highly refined flour has excellent keeping qualities and will produce uniform results in the texture of bread and cakes but it is much lower in the vitamin B complex. The five B vitamins which have now been separated in pure crystalline form are thiamin, riboflavin, nicotinic acid, vitamin B_6 and pantothenic acid. Nutritionists are finding it difficult to plan diets which meet the minimum requirements for B_1 and still include the quantities of white bread, sugar and other refined foods to which people have become accustomed.

COFFEE AND SIMILAR PRODUCTS. From earliest history, man has made beverages by brewing leaves, bark, roots, seeds, fruits, flowers or nuts. Only those containing caffeine or theobromine have persisted. Decaffeinated products and cereal substitutes are available for those who cannot tolerate stimulants. Accepted coffee and similar products are listed.

MELON TIME. Melon is a term applied to the sweeter fruits of the gourd family. The flavor improves each season through experiments in cross breeding. A good melon can be detected by the stem scar, color and odor. Cantaloup and watermelon are good sources of vitamin C, contain vitamin A, and cantaloups are a fair source of vitamin B_1. Simple ways of serving melons are given.

Journal of the American Dental Association

Vol. 27, July 1940

The fluorine and dental caries problem. G. J. Cox.—p. 1107.
*Endemic fluorosis and dental caries. Editorial.—p. 1115.

ENDEMIC FLUOROSIS AND DENTAL CARIES. The ingestion of excess fluoride is undesirable in

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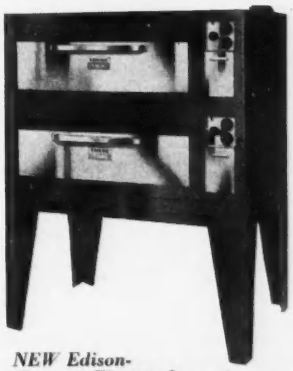

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the tooth structure because of its mottling influence. This undesirable and disfiguring mottling can be averted by avoiding the use of water containing a large amount of fluorides and by the proper restriction of the amount of fluorides in foods.

Journal of the American Medical Association

Vol. 115, July 6, 1940

*Treatment of hypoprothrombinemia hemorrhagica neonatorum. H. G. Poncher and K. Kato.—p. 14.
*Treatment of blood disorders. VI. Pernicious and other macrocytic anemias.—p. 39.
Physiologically active iodized proteins. Editorial.—p. 46.

Vol. 115, July 13, 1940

*The disturbance of carbohydrate metabolism in hyperthyroidism. T. L. Althausen.—p. 101.

Vol. 115, July 20, 1940

*Treatment of blood disorders. VIII. Hemorrhagic diseases.—p. 211.

Vol. 115, July 27, 1940

*Self-selected diets in toxic goiter. H. M. Jones.—p. 274.
*Some recent advances in vitamin therapy. T. D. Spies, D. P. Hightower and L. H. Hubbard.—p. 292.

HYPOPROTHROMBINEMIA. Twenty-two infants with hemorrhagic disease of the newborn were successfully treated with synthetic preparations of vitamin K and its esters. Vitamin K is specific in the treatment of hypoprothrombinemia hemorrhagica neonatorum.

MACROCYTIC ANEMIAS. Macrocytic anemia is a deficiency disease. The antianemic factor is stored in the liver and has its source in the interaction of a heat-stable substance present in meat and other protein foods with a thermolabile material present in normal gastric juice. Depletion of the antianemic factor occurs as the result of a lack of the intrinsic factor in pernicious anemia, an inadequate diet giving rise to the macrocytic anemia in pellagra and tropical sprue, impaired absorption in sprue, and the failure to store the factor in certain cases of cirrhosis. The objective of treatment is the restoration of the antianemic principle which can be accomplished by the administration of liver or extracts of liver.

HYPERTHYROIDISM. The basic disturbance of carbohydrate metabolism in hyperthyroidism consists of accelerated intestinal absorption of sugars and starch and of increased oxidation of dextrose in the tissues which leads to a depletion of glycogen stores. Glycosuria, postprandial hyperglycemia and high dextrose tolerance curves in patients with hyperthyroidism do not indicate the coexistence of diabetes. Patients with hyperthyroidism should receive high caloric, high carbohydrate diets divided into frequent feedings. In myxedema, diminished absorption of carbohydrates accounts for the low sugar tolerance curves.

HEMORRHAGIC DISEASES. The exact mechanism of the cause of hemophilia is unknown. In acute and chronic idiopathic thrombocytopenic purpura, splenectomy preceded and followed by transfusions of blood produces dramatic and usually permanent cessation of the bleeding tendency. Hemorrhagic disease of the newborn may be associated with decreased prothrombin content of the blood. The administration of vitamin K to the infant or to the pregnant mother will overcome this defect.

SELF-SELECTED DIETS IN TOXIC GOITER. Persons suffering from toxic goiter—regardless of age, sex or type of goiter—uniformly show a tendency to select a diet below the normal minimal limit of 13% protein calories. When put on a diet containing the normal per cent of protein the toxic goiter patient tends constantly to revert to his own preference for the subnormal protein diet.

VITAMIN THERAPY. During the past 1½ years, 1500 persons with clinically associated deficiency disease syndromes have been treated. Studies indicate that these people have a mixed rather than a single deficiency disease. Mixed therapy is often advisable. The administration of water-soluble vitamins together, and fat-soluble vitamins together is recommended as having definite usefulness in the treatment of deficiency diseases. A well balanced, high caloric diet should be used. A diagrammatic representation of the interrelationship of the vitamins is included.

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Journal of Biological Chemistry

Vol. 134, July 1940

*The adsorption of fluorides by enamel, dentin, bone, and hydroxyapatite as shown by the radioactive isotope. J. F. Volker, H. C. Hodge, H. J. Wilson and S. N. Van Voorhis.—p. 543.

*The relation of thiamine to citric acid metabolism. H. A. Sober, M. A. Lipton and C. A. Elvehjem.—p. 605.

*Creatine formation in liver and in kidney. H. Borsook and J. W. Dubnoff.—p. 635.

*Studies in protein metabolism. XIV. The chemical interaction of dietary glycine and body proteins in rats. S. Ratner, D. Rittenberg, A. S. Keston and R. Schoenheimer.—p. 665.

The effects of liver and pancreas extracts upon fat synthesis and metabolism. E. W. McHenry and G. Gavin. —p. 683.

*Fatty acids synthesized by the action of thiamine. H. E. Longenecker, G. Gavin and E. W. McHenry.—p. 693.

*The influence of the type of carbohydrate ingested upon citric acid production. C. E. Meyer and A. H. Smith. —p. 739.

*The d-amino acid oxidase content of rat tissues in riboflavin deficiency. A. E. Axelrod, H. A. Sober and C. A. Elvehjem.—p. 749.

*Progress of hypervitaminoses D_2 and D_3 and recovery in rats, as affected by dietary calcium and phosphorus and vitamin A. A. F. Morgan, N. Shimotori and J. B. Hendricks.—p. 761.

FLUORINE ADSORPTION. Chemical analyses have shown that sound enamel from sound teeth contains more fluorine than that from carious teeth. Field studies have shown a lower incidence of caries in areas of mottled enamel. Rats develop less caries on a caries-producing diet when fluorine is added to the diet. Fluorine reduces the acid production or oral bacteria and the solubility of the dental tissues. Samples of powdered enamel, dentin, bone, and hydroxyapatite were exposed to solutions of sodium fluoride. The amount of fluorine picked up demonstrated that fluorine does adsorb on dental tissues.

THIAMIN IN CITRIC ACID METABOLISM. Studies upon the excretion of citric acid during thiamin deficiency indicate a decreased excretion of citrate during the acute deficiency. Rats suffering from thiamin deficiency show a decreased ability to transform injected succinic acid into citric acid. A 10-fold rise in citric acid excretion is observed within 4 to 6 days after thiamin is given to deficient rats. Thiamin pyrophosphate is essential for the synthesis of endogenous citric acid from its precursors.

CREATINE FORMATION. There is evidence of the existence of small amounts of creatine precursors in the livers of the guinea-pig, pigeon, and rat, and in the kidneys of the cat, dog, guinea-pig, frog, rabbit and rat. Creatine normally is formed by the methylation of glycocyamine in the liver.

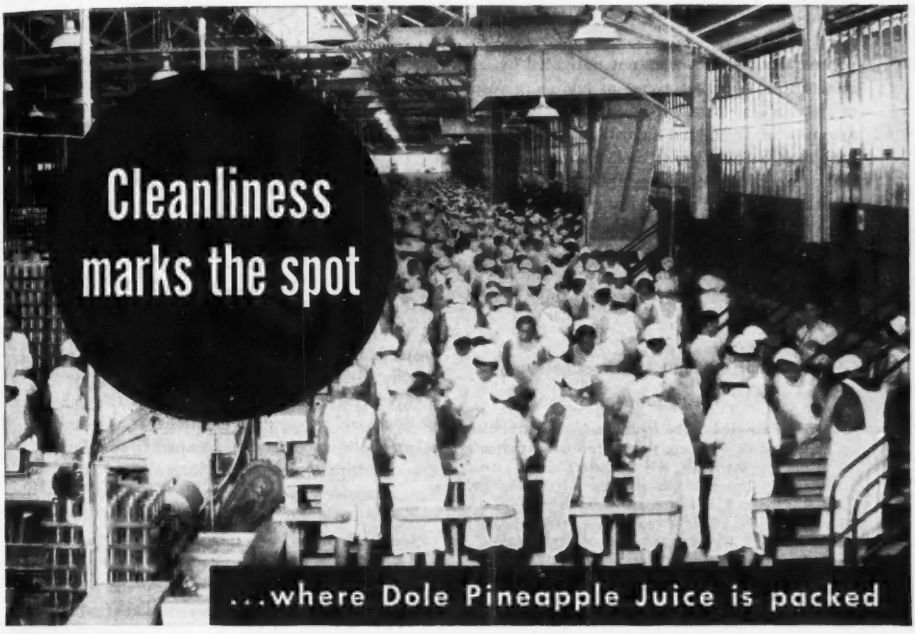
PROTEIN METABOLISM. Four adult non-growing rats were kept on an ordinary stock diet to which was added during the last 3 days an amount of glycine corresponding to 23 mg. of nitrogen per rat per day. The glycine was excellently absorbed, but only 40% of the isotopic nitrogen appeared in the urine. Almost all of the rest had replaced a corresponding amount of body nitrogen. Glycine is involved in the continuous process of yielding nitrogen to and accepting nitrogen from the other amino acids.

FATTY ACID SYNTHESIS BY THIAMIN. When young rats were taken from a ration containing fat and fed for 3 weeks on a vitamin B complex-deficient ration which was free of fat, they lost fat gradually from their body stores. Addition of thiamin caused a rapid deposition of fat in the body. The liver fat was also markedly increased owing to the absence of dietary choline.

CARBOHYDRATE AND CITRIC ACID. The excretion of citric acid was practically the same when the diets contained glucose, fructose or galactose but was more than doubled when dextrin or starch replaced the sugar.

RIBOFLAVIN DEFICIENCY. A riboflavin deficiency in the rat results in a lowering of the d-amino acid oxidase content of its liver and kidney. There is a marked decrease in the riboflavin content of the liver. When a growth stimulation results from the addition of riboflavin alone to a partially synthetic ration deficient in more than one member of the vitamin B complex, further supplementation with other members of the vitamin B complex facilitates the complete synthesis of the enzyme.

HYPERVITAMINOSIS D_2 AND D_3. The levels of both calcium and phosphorus and their ratio in the diet were the primary factors in the production of normal femur calcification of young rats. The damaging effects of the low phos-



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phorus, purified diet were not mitigated by administration of either excess or minimum doses of vitamin D or parathyroid extract. Excessive amounts of irradiated ergosterol or calciferol were most harmful with a diet of normal calcium and phosphorus content and ratio, and had toxic effects also with the adequate calcium-low phosphorus diet but favorable results with the low calcium-adequate phosphorus diet. Low vitamin A intake allowed greatly increased tissue calcification and other damaging effects of hypervitaminosis D.

Journal of Clinical Investigation

Vol. 19, July 1940

*Studies on anacidity: The hydrogen-ion concentration of the gastric secretion, the gastroscopic appearance of the gastric mucosa, and the presence of a gastric secretory depressant in patients with anacidity. J. B. Kirsner, P. B. Nutter and W. L. Palmer.—p. 619.

*A study of the effects of sulfanilamide on acid-base metabolism. W. W. Beckman, E. C. Rossmeisl, R. B. Pettengill and W. Bauer.—p. 635.

*Serum urate in relatives of gouty patients. J. H. Talbott.—p. 645.

Hydrogen-ion Concentration of Gastric Secretion. The *p*H of the gastric secretion in pernicious anemia falls within a range of *p*H 7.0 to 8.0 and shows no appreciable drop after histamine stimulation. The *p*H in atrophic gastritis resembles that of pernicious anemia but varies more after histamine stimulation. The *p*H after histamine stimulation in carcinoma of the stomach with anacidity and in the anacidity which sometimes follows radiation therapy is lower and more variable than in pernicious anemia. There is no correlation between the hydrogen-ion concentration of the gastric secretion, the gastroscopic appearance of the stomach mucosa, the presence or absence of a secretory depressant factor in the gastric secretion and the presence or absence of anemia.

Effect of Sulfanilamide on Acid-Base Metabolism. Over a period of continued administration of sulfanilamide there is a large loss of sodium accompanied by a smaller loss of potassium and little or no loss of chloride-ion. There is no replacement of this deficit by extension of the other components of total base.

Serum Urate in Relatives of Gouty Patients. In a study of 136 relatives of 27 patients with gouty arthritis an elevated serum urate, an essential of gout, was observed in symptom-free members.

Journal of the Missouri State Medical Association

Vol. 37, July 1940

*Peptic ulcer. Recent considerations in diagnosis and treatment. B. Kenamore.—p. 285.

Peptic Ulcer. Peptic ulcer affects males 4 times as frequently as females. It never occurs in the absence of free hydrochloric acid. There is always some predisposing factor to altered gastroduodenal physiology. Dietary and alcoholic abuses, irregular hours of eating and rest, foci of infections especially in the gallbladder and appendix, emotional crises and other disturbances lead to an upset in coordination of normal stomach and intestinal function. The excessively restricted older diet lists are being replaced by more liberal menus which include soft cooked vegetables, fresh fruit juices and lean, broiled meats on all but acute ulcer régimes. Concentrated vitamin preparations may be given. Meals and intermediate feeding should be taken at the same time each day.

Journal of Nutrition

Vol. 20, July 1940

*Cereals and rickets. X. The availability of phytic acid phosphorus. C. H. Krieger, R. Bunkfeldt and H. Steenbock.—p. 7.

*Cereals and rickets. XI. Calcium phytate as a source of calcium. C. H. Krieger, R. Bunkfeldt and H. Steenbock.—p. 15.

*Calcium and phosphorus metabolism in rats and dogs as influenced by the ingestion of mineral oil. M. C. Smith and H. Spector.—p. 19.

*Taste thresholds and taste preferences of rats for five common sugars. C. P. Richter and K. H. Campbell.—p. 31.

*The plane of intake of beef muscle protein as affecting the energy and the nitrogen metabolism of the mature albino rat. E. B. Forbes, A. Black, E. J. Thacker and R. W. Swift.—p. 47.

*Hyperalimentation in normal animals produced by protamine insulin. E. M. MacKay, J. W. Callaway and R. H. Barnes.—p. 59.

*Effect of fluorine on the activity of vitamin D in rachitic rats. K. Morgareidge and S. B. Finn.—p. 75.

Phytic Acid Phosphorus. When rats were fed a cereal-free ration of normal calcium content the utilization of phosphorus from phytic acid was markedly enhanced by the addition of vitamin D. The utilization of phosphorus from phytic acid was in no case equal to that of inorganic phosphorus.

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CALCIUM PHYTATE. When calcium phytate was added to a cereal-free, low-calcium ration, its calcium was found to be as readily available to the rat as the calcium of calcium carbonate. Vitamin D improved the utilization of both forms of calcium to the same extent.

MINERAL OIL AND MINERAL METABOLISM. Mineral oil ingestion interfered with the utilization of vitamin D fed separately as cod liver oil to such an extent that 3 times as much cod liver oil was necessary to induce healing of the rachitic lesions of rats when the basal ration contained 5% mineral oil, and somewhat between 5 and 10 times as much was needed when 10% mineral oil was incorporated in the basal ration. Balance studies showed that mineral oil ingestion by young dogs interfered with the retention of both calcium and phosphorus so seriously that normal calcification of the bony structure was not possible.

TASTE THRESHOLDS FOR COMMON SUGARS. Rats showed the greatest preference for maltose, next for glucose and sucrose, only a slight appetite for galactose, and none for lactose. The animals exhibited the greatest preference for solutions of the various sugars when offered in concentrations near 10% which is the concentration of sugar most commonly used by humans to sweeten drinks. When offered in purified form to adult animals, maltose is utilized better than the other sugars, lactose least well.

METABOLISM OF MATURE RAT. The effects of the plane of protein intake on the utilization of the food protein and energy of equicaloric diets containing 10%, 25% and 45% protein were investigated in a 70-day balance experiment with mature albino rats. The rats remained in approximate equilibrium with respect to live weight and to the nitrogen content of their bodies. The metabolizable energy diminished in the order of the increasing protein contents of the diets. The heat production diminished, slightly, in the order of the increase in protein in the diets. Urinary nitrogen per calorie of urinary energy increased in the same order as the increase in dietary protein.

HYPERALIMENTATION DUE TO INSULIN. Regular insulin in doses of 1 to 5 units per 100 gm. body weight per day had no measurable effect upon the food intake or body weight of albino rats. The slowly absorbed protamine zinc insulin in similar doses had a remarkable influence upon the appetite. The food intake could be more than doubled in this manner leading to large increases in body weight. The chief factor leading to the increased appetite appeared to be the decrease in the blood sugar level, for an inverse relationship between the latter and the food intake was demonstrated in the rabbit.

FLUORINE AND VITAMIN D ACTION. In rats on a rachitogenic diet containing fluorine, there is a decrease in the severity of the rickets due to a general increase in the density of the bones to x-rays and to a decrease in width of the metaphyseal zone of hypertrophic cartilage. Vitamin D promotes the healing of this "fluorin-rickets." Fluorine inhibits the healing process when given simultaneously with vitamin D to rachitic rats which have not been previously subjected to fluorine poisoning.

Journal of Pediatrics

Vol. 17, July 1940

*Disturbance of osseous and lipid metabolism in a child with primary carcinoma of the liver. A. E. Hansen, M. R. Ziegler and I. McQuarrie.—p. 9.

*Prevention of rickets in premature infants with parenteral administration of single massive doses of vitamin D. C. Zelson.—p. 73.

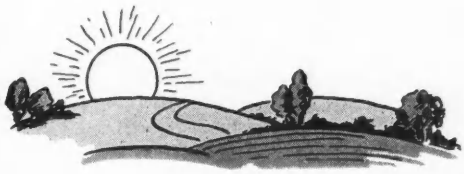
The use of soybean emulsion in a simplified régime for the study and treatment of infantile eczema. S J. Levin.—p. 79.

Panel discussion on thyroid gland in childhood. A J. Carlson, G. Curtis, R. L. J. Kennedy, O. P. Kimball and J. F. McClendon.—p. 107.

Round table discussions on convulsions. M. G. Peterman and J. E. Dyson.—p. 114.

DISTURBANCE OF OSSEOUS AND LIPID METABOLISM. Results of a mineral balance study in a case of primary carcinoma of the liver in a 10-year-old child indicate that the extreme osteoporosis was due to defective retention of calcium and phosphorus by the osseous system. The liver may normally play an essential rôle in osseous metabolism.

PREVENTION OF RICKETS IN PREMATURE INFANTS. No rickets appeared in the premature infants who received 600,000 units of vitamin D_2 or D_3 parenterally.



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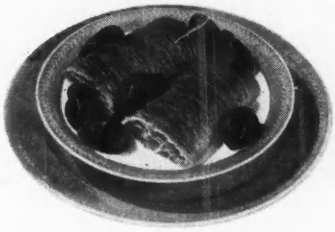

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VITAMIN B_1	60 Int'l Units	38 Int'l Units
VITAMIN A	Fair content	Good content
VITAMIN G	Fair content	Good content
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CALCIUM	.04%	.12%
PHOSPHORUS	.42%	.09%
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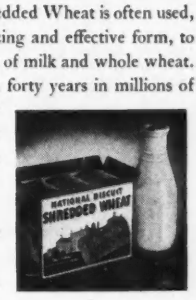

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New England Journal of Medicine

Vol. 223, July 4, 1940

*Diabetes mellitus. E. P. Joslin.—p. 22.

Vol. 223, July 18, 1940

*Vitamin A requirements in rheumatoid arthritis. M. G. Hall, T. B. Bayles and P. Soutter.—p. 92.

Vol. 223, July 25, 1940

*The physical growth, the degree of intelligence and the personality adjustment of a group of diabetic children. A. P. McGavin, E. Schultz, G. W. Peden and B. D. Bowen.—p. 119.

DIABETES. Trauma may aggravate diabetes but there seems to be no causal relationship. Seventy-five to 80% of diabetic patients need insulin to enable them to utilize a satisfactory diet. Most individuals with diabetes are middle-aged or elderly, and most of these have mild diabetes. The common causes of insulin reactions are overdosage with insulin, failure to take the usual amount of food at the regular time or to assimilate it, and unusual exertion. In patients receiving insulin, it is important that the diet be uniform from day to day. Before unusual exercise patients should take a light lunch yielding from 10 to 20 gm. of carbohydrate.

RHEUMATOID ARTHRITIS. Patients with rheumatoid arthritis showed much higher average dark adaptation curves than did a group of controls, as measured by the biophotometer. Supplemental doses of from 25,500 to 68,000 U.S.P. units of vitamin A per day were necessary to establish and maintain normal levels.

DIABETIC CHILDREN. Forty-nine treated diabetic children were studied from the standpoint of physical growth, degree of intelligence and personality adjustment. More boys than girls were below the minimum height standard; the weight of both sexes fell between the minimum and maximum standards. The children were neither significantly brighter nor duller than non-diabetic children. Thirty-two children were maladjusted but the diabetes itself was not the only contributing factor. The earlier the child developed diabetes, the more readily he accepted it emotionally as a part of growing-up. Parents should receive advice in the handling of their children in order to prevent maladjustments.

Public Health Reports

Vol. 55, July 26, 1940

*Effect of synthetic pantothenic acid on adrenal hemorrhage, atrophy, and necrosis in rats. F. S. Daft, W. H. Sebrell, S. H. Babcock and T. H. Jukes.—p. 1333.

*The effect of administration of pantothenic acid on the histopathology of the filtrate factor deficiency state in rats. L. L. Ashburn.—p. 1337.

EFFECT OF SYNTHETIC PANTOTHENIC ACID. Repair or prevention of adrenal hemorrhage, atrophy, and necrosis in rats is brought about by a daily dose of 100 micrograms of synthetic pantothenic acid for 6 to 14 days. A deficiency of pantothenic acid is at least one of the causes of these adrenal lesions in rats on deficient diets.

PANTOTHENIC ACID AND FILTRATE FACTOR. The adrenal lesions, abnormal testicular function, and cartilage hypoplasia occurring in rats fed on a diet deficient in the "filtrate factor" are markedly affected by supplementing the diet with pantothenic acid. Arrest and repair of adrenal lesions occur, testicular function is improved, and skeletal growth is accelerated. Rats develop a partial or complete adrenal cortical insufficiency on the deficient diet.

EDUCATION

Carnegie Foundation for the Advancement of Teaching

34th Annual Report, 1939

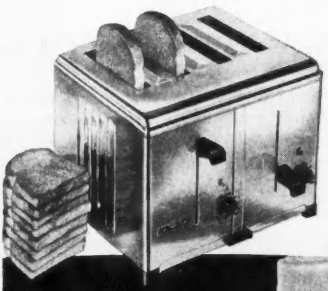
Accrediting agencies. A. Z. Reed.—p. 29.

Educational Record

Vol. 21, Supplement, January 1940

*Education and the future of the public service. L. H. Gulick.—p. 152.

EDUCATION AND THE FUTURE OF THE PUBLIC SERVICE. There has been since 1900 a tremendous increase in the number of employees engaged in public service. In 1900 in the federal government there were 300 employees per 100,000 population and by 1939 the number had risen to 700. In the United States as a whole in 1939 there were 2930 people in public employment per 100,000 population. There is today a total of 3,800,000 people engaged in such service exclusive of those supported by relief. A large proportion of graduates of institutions of higher learning and of professional schools have gone into service of the public. A



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Served with fresh, piping-hot toast quickly made on Toastmaster Toasters

DINNER TRAY

Tomato juice; broiled chicken livers on Toastmaster Toast; creamed potatoes and asparagus; grapefruit and cherry salad; cocoanut cake; milk.

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TOAST is an attractive, easily digestible form of carbohydrate, ideal for Bland Diets, Surgery Diets, Smooth Diets, Low Residue Diets and as a supplementary food in Infant Feeding.

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You'll never waste a piece of bread nor a bit of current with a TOASTMASTER Toaster, because the exclusive, self-adjusting Flexible Timer never makes a mistake, never needs watching, turns out slice after slice of the delicious kind of toast that patients like . . . even when help is careless.

SOLD BY LEADING FOOD EQUIPMENT DEALERS. Made in 2, 3, 4, 6 and Duo-8 slice models with capacities from 110 to 435 slices per hour.

McGRAW ELECTRIC COMPANY, Toastmaster Products Division, Elgin, Ill., manufacturers of "Toastmaster" trademarked, fully automatic Toasters, Bun Toasters, Roll and Food Warmers, Waffle Bakers.

Distributed in Canada by Canadian General Electric Co., Toronto

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study which covered eight years is probably typical. Total returns from more than 5000 graduates of all colleges and schools of a university showed that over 30 per cent of the men and 28 per cent of the women had been in public service—federal, state, or local—at one time or another. Among the schools percentages varied greatly, but those of agriculture, forestry, and home economics showed a high percentage, with 84 per cent of the men and 65 per cent of the women having been in such service. This fact and the demand for civil service and technical training for "public service" have brought special courses into colleges, so that the requirements for civil service tend to become not for "such-and-such training, but such-and-such courses" because they are tangible. Therefore, many civil service people are tempted to state educational requirements in connection with the development of qualifications for given examinations and positions. There is need for greater effort in trying to fit together the civil service administration side with the educational administration side. Otherwise it is likely that personnel directors will ask for too specific and too limited skills and training; that schools will train for non-existent jobs; and that too much reliance will be put on paper tests.

Journal of the Association of American Medical Colleges

Vol. 15, July 1940

Relation of general education to professional education. F. C. Zapffe.—p. 228.

Journal of Higher Education

Vol. 11, June 1940

Recent trends in higher education. R. L. Higgins.—p. 304.

Proceedings of the Institute for Administrative Officers of Higher Education

Vol. 11, 1939

*Future of accrediting movement in higher education for the professions. A. M. Schwitalla.—p. 191.

FUTURE OF ACCREDITING MOVEMENT. The accrediting movement, through extension to ever new areas and intensification of content, has, for the present, reached a peak of activity and it is simultaneously being subjected to the most searching criticism that it has ever encountered. The partition of the professions from the relatively simple classification of the bygone century when man talked facilely of medicine, law, teaching, and preaching as the four areas of professional activity, has given way to a greatly enlarged list of professions and semiprofessions. These, for the most part subdivisions of the basic professions, have developed in response to growing knowledge and growing specialization. This partitioning trend still continues and each of the new professions, with its own selfconsciousness and its own ambitions, develops training centers or schools, and, as soon as these are multiplied, the demand for some form of accreditation becomes insistent. Accreditation procedures are at the same time becoming more penetrating. Illustrative of this trend in the academic field is the North Central Association in which "a chasm of human experience separates the evaluation procedures of the days of 1930 from those in use today." Formerly, institutional examination was relatively simple, and a more or less mechanical or statistical procedure. "Today, when the totality of the institution is under study, the procedures become vastly intricate; it demands a comprehensive power of judgment; it requires a reconstructive imagination on the part of the examiner." In medicine there is a vast difference between the earlier visits to medical schools and those conducted recently in which "the departmental emphasis of the older methods has given way to the intricate emphasis of the newer. . . ."

Present trends in the accrediting movement affect the areas of professional education in a particularly emphatic manner and intensification of it in both extent and content, and criticism of it, "are affected by forces which are dynamically operative in the general fields of education, of the professions, and of society as a whole." They demand constant study and observation, for accreditation is more than an administrative procedure, a technic of cultured society, or a mechanical process for adjustment. It is the expression of a present attitude of human society and will be influenced by the changes which it undergoes.

New findings confirm dietary importance of

MOLASSES

as an inexpensive source of iron

HIGH IRON CONTENT IS OVER 80% AVAILABLE

QUICK SUMMARY

RESULTS: New Orleans molasses, known to be one of the richest food sources of iron, has now been proven to contain iron of from 80% to 97% *availability.*

HOW TESTED: (A) Chemically and biologically[1]. (B) Clinically[2].

SUGGESTED USES: For child feeding where its high calorie value plus iron content make molasses a valuable dietary asset; and to provide extra iron during pregnancy.

AVAILABLE IRON CONTENT: 0.653 mgs. per tablespoonful in Brer Rabbit Molasses—Gold Label grade. 1.078 mgs. per tablespoonful in Brer Rabbit Molasses—Green Label grade.

SUGGESTED AMOUNT: One to three tablespoonfuls daily. This may be taken plain, on bread, cereal, desserts or in milk. Physicians may vary the amount, depending on the iron need, age, condition and tolerance of the individual.

AN unusually large percentage of molasses iron proves to be readily available for use by the body. This, together with its high iron *content,* places molasses second only to beef liver as a food source of absorbable iron.

To supply up-to-date, exact data on this subject, the makers of Brer Rabbit Molasses co-operated in carrying out chemical, biological and clinical research. A brief summary of results of the chemical and biological tests is reported here for the information of the medical profession.

THE MOLASSES USED IN ALL OF THESE TESTS WAS BRER RABBIT NEW ORLEANS MOLASSES. Medicinal iron was used as the standard for comparison.

Chemical and biological tests now reported[1] show the availability of iron in Brer Rabbit Molasses to be over 90% in the Gold Label grade, and over 80% in the Green Label grade.

Taste preferences for molasses differ. Brer Rabbit comes in two flavors to meet all requirements. If a dark, full-flavored molasses is desired, specify Green Label Brer Rabbit (Molasses "B" in table). If a light, mild-flavored molasses is wanted, specify Gold Label Brer Rabbit (Molasses "A" in table).

Because of its low cost and palatability, may we suggest that you recommend the use of Brer Rabbit New Orleans Molasses where a higher iron content in the dietary is desirable? Penick & Ford, Ltd., Inc., Manufacturers of Brer Rabbit Molasses, New Orleans, La.

TABLE[1]

	Total iron mg/100 gm	Per cent availability	Available iron mg/100 gm
MOLASSES "A"*	3.2	97	3.1
MOLASSES "B"**	6.0	85	5.1
BEEF LIVER	8.2	70	5.7
OATMEAL	4.8	96	4.6
APRICOTS (*dry*)	4.1	98	4.0
EGGS	3.1	100	3.1
WHEAT	5.0	47	2.4
RAISINS (*Muscat*)	3.0	62	1.9
PARSLEY	3.2	50	1.6
BEEF MUSCLE	3.0	50	1.5
OYSTERS	5.8	22	1.3
CABBAGE	1.8	72	1.3
MUTTON	5.1	24	1.2
LETTUCE	1.5	63	0.9
SPINACH	2.6	20	0.5

*Brer Rabbit—Gold Label **Brer Rabbit—Green Label

1. Am. J. Dig. Dis. Vol. VI, No. 7 (Sept.) pp. 459-62, 1939

2. Clinical research completed. Paper being prepared for publication. Reprints of these papers will be sent physicians and nurses on request.

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods

INSTITUTION MANAGEMENT

American Restaurant Magazine

Vol. 24, May 1940

*New horizons in restaurant lighting. C. T. Allen and W. M. Potter.—p. 31.
*Open season for salad dividends. L. D. Freeman.—p. 34.
*Specifications protect values in vegetable buying. G. L. Wenzel and S. Mallick.—p. 38.
*Modern checking system a feature of Old Henrici's. H. J. Silbar.—p. 42.
*You can harness portion costs on tasty desserts.—p. 44.
*Kadota fig pie. M. B. Strause.—p. 46.
The buyer of china.—p. 48.

Vol. 24, June 1940

*Basic steps in food cost control. L. Weaver.—p. 30.
Blueberry muffins—a specialty that brings them back. M. B. Strause.—p. 32.
*Some suggestions on "freshening up" your restaurant interior. F. Schmid.—p. 33.
*Smart merchandising methods keep Old Madrid in the public eye.—p. 36.
*Making money in the small hotel's restaurant. F. L. Mino.—p. 42.
*Quick-frozen menu-magic has profit-appeal. G. L. Wenzel and S. Mallick.—p. 44.
*Restaurant equipment men study standardization problems. H. C. Siekman.—p. 47.
*How pre-testing assures efficiency in restaurant equipment. T. J. Gallagher.—p. 92.

LIGHTING. Second in a series of articles discusses in detail lighting for "atmosphere" by means of general, supplementary, or decorative lighting. Clear illustrations emphasize points.

SALADS. Many novel and delicious salad combinations from fresh fruits, vegetables, meat, fish, or egg are described. First course, entrée, and side salad suggestions are practical and original. Correct service of these salads on china designed to increase their sales appeal and customer satisfaction is stressed.

VEGETABLE BUYING BY SPECIFICATIONS. Most efficient vegetable cost control demands careful buying and receiving control. Specification should state: variety, U. S. specifications, source, net weight per container and condition of product. A tabulation comparing fresh, frozen, and canned vegetable costs and total yield in 3-oz. portions per bushel is used to determine the cost price if vegetables cost 2¢ a portion when served. Charts of snap beans and spinach are used to illustrate the facts necessary for informed buying.

SPEEDING UP SERVICE. Food-checking machines are used to decrease service time and serve as a check on income for the day's business.

DESSERT PORTIONS. An interesting study determines the most satisfactory size of a dessert portion to be 4 oz. in relation to an estimated total intake of 40 oz. for all the courses of a meal. The use of a soufflé cup, No. 51, ensures the same 4-oz. portion size for all desserts. This practice increases customer satisfaction, standardizes servings, and helps to prevent fluctuating price costs.

FIG PIE. Kadota fig whipped cream pie features a Graham cracker crust, whipped cream gelatin base, and service of pie when well chilled. Recipes for 2, 4, 8, and 16 pies.

COST CONTROL. Outlines simple methods of food cost control by means of menu planning, specification buying and receiving, preparation, cooking and serving, portion size, use of leftovers, daily food costs records.

INTERIORS. Gives 45 ways of modernizing restaurant interiors with procedure for renovation.

RESTAURANT MERCHANDISING. Methods used in "Old Madrid", Detroit, to avoid monotony and increase profits. Alcoves transformed into dining rooms have individual characteristics; remote alcoves are used for college club meetings. Two graduate dietitians employed. Guests are told when their favorite dish is to be on menu. Recipe for Tomato Castellano, a favorite with guests, and several popular plate specials with prices are given.

PROFIT IN SMALL HOTEL'S RESTAURANT. Presents profit and loss statement of small hotel restaurant showing net profit in both 1938 and 1939. Quality of food too high for price, too many menu items, and lack of menu variety are common causes of loss in small restaurants. Manager should know food cost percentage from day to day, practice close daily supervision, and have correct payroll ratios.

How well utilized are the calcium and phosphorus in fortified cereals?

AN EXPERIMENT conducted by the College of Medicine of a state university sought to compare the utilization of calcium and phosphorus, when supplied chiefly in milk, with the utilization of the same minerals supplied by "New 5-Minute" Cream of Wheat.

Two groups of pre-school children, each consisting of two girls and three boys, served as subjects for six months.

It was discovered that the calcium and phosphorus of "New 5-Minute" Cream of Wheat were utilized as well, if not better, than when supplied by milk.

Other experiments demonstrated that this new cereal cooks to full digestibility in 5 minutes of boiling—even for infants. Besides calcium and phosphorus, "New 5-Minute" Cream of Wheat has added iron and Vitamin B_1. It also has a somewhat richer flavor than "Regular" Cream of Wheat, recommended by many physicians for 45 years. Yet these advantages have been made without increasing the price. Both "New 5-Minute" and "Regular" Cream of Wheat are available at most food stores.

May we send you clinical samples of "New 5-Minute" Cream of Wheat? Write Dept. S10, Cream of Wheat Corporation, Minneapolis, Minnesota.

Mineral and Vitamin content of
"NEW 5-MINUTE" CREAM OF WHEAT
in average servings of 20 grams

PHOSPHORUS	118.0 milligrams
CALCIUM	101.0 milligrams
IRON	8.5 milligrams
VITAMIN B_1	11.0 Int'l Units

"Cream of Wheat" Reg. U. S. Pat. Off.

FROZEN FOODS. Lists advantages of using quick-frozen foods; *i.e.* quick control of portion costs, labor saving, fuel saving, space saving, greater variety, excellent quality, portion control. Frozen foods should be kept at temperature of 0–10 degrees F. Standard portion and cooking chart given for asparagus, broccoli, Brussels sprouts, cauliflower, corn, Lima beans, peas, peas and carrots, snap beans, spinach and squash. Another table gives the number of 2-oz. portions in cartons of apricots, blueberries, cherries, cranberries, peaches, pineapple (crushed), raspberries, rhubarb, strawberries, prune plums and young berries. A 32-page report on quick frozen foods is available for $1.

STANDARDIZATION RESTAURANT EQUIPMENT. Members of Food Service Equipment Industry (F.S.E.I.) met with Bureau of Standards, U. S. Dept. of Commerce, to hasten standardization of restaurant equipment. Shop Standardization Committee of F.S.E.I. recommended standard specifications on: steel sheets, galvanized sheets, stainless sheets, sinks, sauce pan racks, lunch counters, cafeteria counters, steam tables, food warmers, and other fabricated items of equipment. Standardization of steam table jars and pans and abrasive tests for china glaze are expected to begin soon.

PRE-TESTING EQUIPMENT. Discusses improved quality of restaurant equipment; ranges, various heating appliances, deep fat fryers and bake ovens. Thorough tests made by A.G.A. Testing Laboratories. Seal of approval given only to manufacturers whose equipment measures up to standards set by the Approval Requirements Committee of the American Gas Association. Preparation and revision of approval requirements are made by experts who have access to all the records and facilities of the A.G.A. Testing Laboratories.

Buildings and Building Management

Vol. 40, May 1940

*Employee safety education. H. W. Howell, Jr.—p. 27.
What percentage for rent?—p. 29.
The wage-hour situation. R. R. Clouse.—p. 30.
*Tax conference briefs.—p. 34.
*Fluorescent lighting.—p. 36.
*Time cards vs. time clocks.—p. 38.
*Cleaner walls at less cost.—p. 42.
*What's new in materials and equipment?—p. 56.

Vol. 40, June 1940

*Maintaining safe floors. E. O. McConohay.—p. 22.
Case-studies in decorating.—p. 32.
*What size refrigerator? W. O. Campbell.—p. 41.

SAFETY EDUCATION. Analysis of accident hazards in office and apartment buildings basis of a list of 7 "Fundamentals of Safety" and 10 "Ways of Keeping Buildings Safe." Suggestions given for training building employees in safe working methods and for protection of tenants and visitors against accidents.

TAX CONFERENCE. Excerpts from the National Conference of Real Estate Taxpayers of interest to all tax-paying individuals.

FLUORESCENT LIGHTING. Discussion of the pros and cons of fluorescent lighting as reported by the National Association of Building Owners and Managers gives data on operating costs in general and special features.

TIME CARDS VS. TIME CLOCKS. Reproduction of an executive's time card is accompanied by a short discussion of why he changed from time clock to time cards. Reports savings in clerical time, and decreased errors in employee recordings of working time.

CLEAN WALLS. Machine wall washing means a better job and less cost. Lists nine reasons for use of machines, and describes principal advantages over old bucket and sponge methods.

EQUIPMENT NEWS. Free booklets on new equipment of special interest to building managers concerning fluorescent lighting, non-slip paint for cement floors, streamlined fittings, and catalog of faucets for every make of plumbing fixture.

FLOOR MAINTENANCE. Discusses safe and unsafe materials and methods in caring for floors of asphalt tile, linoleum, hard-surface, rubber and concrete. Also suggests accident prevention methods.

REFRIGERATOR SIZES. Suggested basis for selection of refrigerator size for use in apartment buildings as result of study based on data from 35 different sources, including manufacturers, trade associations, universities and government bureaus, is 1½ cu. ft. per person.

no extra cost
for *heavy-duty!*

Today you can buy a *heavy-duty* shortening AT NO EXTRA COST. *Heavy-duty* MFB — as the name implies — is powered for the machine punishment any shortening must face in the modern kitchen.

Made only from the finest vegetable oils, *heavy-duty* MFB is so bland and delicate in flavor that you can use it in your finest icings and sauces — yet it gives you the protection of a shortening that can withstand Speed, Heat or Creaming.

Specify *heavy-duty* MFB, the shortening that gives you triple value at the regular price.

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Technical assistance is available to help you work out specific problems. If you wish to test new *heavy-duty* MFB, write Shortening Headquarters, 21 West St., New York City, for a generous sample.

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(In writing to advertisers, please mention the journal—it helps.)

Consumers' Guide

Vol. 6, April 1940

*Does its price tell its quality?—p. 2.
*Have you termites in your home?—p. 7.

PRICE AND QUALITY. Study of relation between price and quality of canned tomatoes and corn by Ohio State University and State Agricultural Experiment Station. Results show that price is not always indicative of quality, labeling of tins misleading.

TERMITE EXTINCTION. Methods endorsed by Dept. of Agriculture for extermination of termites suggest repair of leaking pipes, replacement of attacked wood structures, application of chemical methods, and incorporation of anti-termite provisions in building codes.

Food Industries

Vol. 12, June 1940

*Do's and don'ts of bargaining with a union. M. A. Pipin.—p. 42.
*Meat packer puts fruit enzyme to work. J. M. Ramsbottom and C. A. Rinehart.—p. 45.
*The way to clean stainless steel. G. C. Kiefer.—p. 48.
How to prevent browning of peaches in the freezing industry—Part II. J. G. Woodroof.—p. 50.
*Machine grades sizes by weight. H. W. Young.—p. 53.
*How quick freezing affects keeping quality of milk and cream. C. L. Roadhouse and J. L. Henderson.—p. 54.
*What the user wants in edible oils. G. W. McBride.—p. 56.
*How foods are frozen in the Northwest—Part III. F W. Knowles.—p. 59.
*Improved preservation in cold storage.—p. 92.
*Adjusting sponge cake formulas to altitude.—p. 92.
*A little tomato juice for better butter cultures.—p. 95.
*Oxidized soybean oil in margarine.—p. 96.
*How to tell beef from mutton in sausage.—p. 96.

UNION BARGAINING. Advice as to obligations and liberties of employer in dealing with the union.

MEAT PACKING. In the research division of Swift & Co. it has been found that bromelin, the proteolytic enzyme in pineapple juice, will act on animal casings of sausages and frankfurts changing them to proteins less resistant to mastication and digestion. Its use is the first industrial application of enzymes in the meat packing industry.

CLEANING STAINLESS STEEL. The simplest procedure for removing ordinary deposits from stainless steel is frequent washing with soap and water. Iron-free emery of 180 grit, or its equivalent, with kerosene as a lubricant should be used when abrasive is necessary. Sterilizing of stainless steel requires special precautions to prevent localized corrosion from contact with hypochlorites. Methods of cleaning for special types of deposit are given.

WEIGHT GRADING. Describes advantages in grading apples for canning by automatic weighing instead of sieving.

KEEPING MILK AND CREAM. From experiments in the quick freezing of certified raw milk, pasteurized market milk, pasteurized market cream, pasteurized homogenized milk, pasteurized homogenized cream and pasteurized homogenized evaporated milk, it has been found that properly pasteurized milk may be frozen by the quick freezing method, retaining a very good flavor and body for six weeks.

OILS. Tells how to select an oil of desired flavor or blandness and how to retain that flavor in the finished product.

FROZEN FOODS. Concluding article in a series of three gives operating practices, data and drawings on the methods and equipment used in the freezing industry of the Northwest.

COLD STORAGE. Progress in accessory treatment of foods by special atmospheres of carbon dioxide, special wrappers, held in cold storage to retard ripening or spoilage.

SPONGE CAKE. States influence of altitude and high quality of eggs in sponge cake making. Formulas for whole-egg and yolk sponge cakes, with adjustments for different altitudes and improved mixing methods are to be published later.

TOMATO JUICE IN BUTTER. How correct amount of tomato juice contributes to the flavor and increases the yield of butter.

SOYBEAN OIL. Soybean oil having a 90% digestibility is used with peanut oil in ratio of 1:2 to aid emulsion in margarin manufacture.

PEP UP YOUR HOSPITAL TRAYS!
with this
Vitamin - Enriched Cereal
As an added fillip to the breakfast tray, why not serve the crisp, delicious cereal that's been enriched with vitamins B1 and D? Each serving of KELLOGG'S PEP contains 4/5 to 1/5 the minimum daily need of vitamin B1, according to age, and 1/2 the daily need of vitamin D. Made by Kellogg's in Battle Creek.
FREE OFFER Write Dept. JAD-010, Kellogg Company, Battle Creek, Mich., for folder "What Are Vitamins?" and index-size card giving percentage composition of PEP and other Kellogg cereals.
Ingredient Analysis
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Wheat Product . . 90.2
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SAUSAGE. A protein extract from the anima for which meat is to be tested, when injected into a rabbit and extracted as a serum, acquires the property of forming a precipitate in filtrate from any protein extract obtained from the same kind of meat. Reaction is highly specific and helps distinguish between use of mutton and beef in manufacture of sausage.

Horwath Hotel Accountant

Vol. 20, June 1940

The trend of business in hotels.—p. 3.
*Making money in the small hotel's restaurant. F. L. Mino.—p. 5.
*The wayside hotel.—p. 6.
*The visitor's dollar.—p. 7.

SMALL HOTEL'S RESTAURANT. Many small hotels produce as favorable a percentage of profit on food and beverages as some of the largest hotels. There is no one simple rule for making money on a small volume of restaurant business but the general principles of restaurant management apply. Close personal supervision and persistent cost control are necessary to maintain a profit.

WAYSIDE HOTEL. The annual statement of a small wayside hotel and restaurant in the Middle West typical of thousands of similar places which are patronized by automobile travelers.

THE VISITOR'S DOLLAR. A table shows the results of surveys on "Where the Visitor's Dollar Goes." The average of nine different studies gives hotels 28.04 cents of the visitor's dollar.

Hospital Management

Vol. 49, June 1940

*Developing an adequate teaching program for student nurses in the dietary department. D. L. Burnett.—p. 50.
Supper on the lawn. M. E. Smith.—p. 53.

TEACHING DIETETICS. A discussion of the importance of comprehensive methods for teaching dietetics and diet therapy to student nurses is presented with objectives of the course specifically outlined. Material to be covered in lecture and laboratory periods is discussed and presented according to hours allowed for each division.

Hospitals

Vol. 14, July 1940

*Teaching dietetics to student nurses. F. T. Proudfit.—p. 110.

TEACHING STUDENT NURSES. Instruction in the science of foods and cookery as related to health and disease is carefully planned and administered for the student nurse. Dietitians are correlating diet therapy with medical and surgical nursing by teaching diet therapy aspects of disease concurrently with the system being studied.

Hotel Management

Vol. 37, June 1940

*May we present—the Wade-Hampton Hotel.—p. 14.
Table linen quiz. C. M. Dahl.—p. 22.
*Tips from an executive housekeeper.—p. 24.
Designs for fuel reduction.—p. 26.
*Louis P. De Gouy's good food hints.—p. 28.
*500 ways to cut food costs. Number 5. J. B. O'Keefe.—p. 29.
*Check for profits.—p. 31.

WADE HAMPTON HOTEL. Pictures, layouts and descriptions of a new hotel built to sell air-conditioned rooms at $2.50 with a profit of 50% of occupancy.

HOUSEKEEPING. This month's discussion of the problems of the executive housekeeper concerns coordination of color schemes, decorating to please the guest, and cost of unionized labor and relations with the union.

GOOD FOOD. Excellent suggestions for the menu and for roasting rib and rolled roasts and broiling steaks. Lists number of servings per pound from roasts and ground meat.

CUTTING FOOD COSTS. The fifth in a series of articles on cutting food costs takes up details of each of the following: over-preparation, substituting expensive food for cheaper items, carelessness, extravagance, indifference, inexperience, faulty menu planning, dumping left-overs, spoilage, excess portions, faulty menu pricing, and lack of control of byproducts and employees' meals.

PROFITS. Discussion of the function of the food checker and of simple and complex systems of food checking.

NEW STUDY*—AGAIN PROVES THE VALUE OF COCOMALT

Fortified Food Drink as a Diet Supplement in Senescence

During senescence, many conditions may be present that tend to prevent adequate utilization of foods. Considerable, however, can be accomplished by the addition of a vitamin-mineral fortified malted food dietonic such as COCOMALT. Such is the digest of a recent study on thirty elderly invalid patients reported in Medical Record.

RESULTS AT A GLANCE:

Red Blood Count & Hemoglobin . . definite improvement in almost all instances
Appetite . . . . . increased
Weight . . . . . moderate gain
Ability to Tolerate Milk . . . . . greatly enhanced

The comprehensive COCOMALT formula provides calcium, phosphorus, iron . . . Vitamins A, B_1, D and G. COCOMALT is a food for quick energy and body building. Its delightful flavor encourages all ages to drink milk.

*Medical Record, August 21, 1940

COCOMALT . . . A DELIGHTFUL FOOD BEVERAGE FOR ALL AGES

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I would like a reprint of the Senescence study.

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JD-10

Hotel Monthly

Vol. 48, April 1940

*The Anchorage.—p. 17.
*100 years of menu making.—p. 42.
*The coffee shop.—p. 55.
*Dunlap Hotel laundry statistics 1938–39.—p. 60.
*Public lavatory index to hotel.—p. 66.
*Bed sheet news.—p. 67.

Vol. 48, May 1940

Food service in hotels on verge of drastic change.—p. 10.
*Chicago's Dearborn station restaurants.—p. 11.
*Summer covers for upholstered furniture.—p. 16.
*To keep a hotel clean—never let it get dirty! T. Ryder.—p. 19.
Decorator service to suit your pocketbook.—p. 23.
*100 years of menu making.—p. 46.
*The coffee shop.—p. 49.
*Mattresses under strenuous tests.—p. 54.

SUCCESSFUL HOTEL DINING ROOM. A detailed description of how the Hotel Windermere, Chicago, analyzed its food problem and installed a relatively new type of dining room, aided by carefully planned promotion to win public interest. Special features include the featuring of special dinners on various days in the week, and an English breakfast for late risers. Best-selling dishes are pictured and typical menus included.

SHIRCLIFFE MENUS. Menus selected from 1901–1912 vary in formality from the à la carte selection offered in first class hotels in 1901 to a menu printed on a linen cuff in 1910.

THE COFFEE SHOP. Discusses the subject of steaks, from hamburgers to T-bones and stresses the importance of close cooperation between kitchen and waiters in stimulating sales on items on which there may be a temporary over-stock.

LAUNDRY STATISTICS. Comparison of operating costs for years 1938–39 by the Dunlap Hotel, Jacksonville, as against figures representing costs of commercial laundry, shows an average saving in the 2 years of $3,800 per year for an average weight of 148,000 lb. laundered.

CLEANLINESS. The public lavatory is becoming a more and more important basis for judging cleanliness of hotels, restaurants, college residence halls and hospitals.

BED SHEET NEWS. A well-known manufacturer is offering a new sheet with a hem woven into the fabric in a decorative design, making unnecessary the use of the turn-back hem.

NEW FRED HARVEY RESTAURANT. This restaurant is the consummation of practical ideas for railroad terminal restaurants as planned, equipped and operated by Fred Harvey during the last 50 years.

SUMMER SLIP-COVERS. Wearing qualities, washability, and most appropriate uses are given in detail for 10 attractive and interesting patterns for summer slip-covers, each pictured and described.

CLEAN HOTELS. Depicts in illustrated article items requiring regular cleaning and special attention. Spots most often missed when help gets careless, or have too much work to complete in regular working period, are listed.

MENUS FROM ARNOLD SHIRCLIFFE COLLECTION. Menus from years 1909–19 include Horse Show menu of 1909 at the Waldorf-Astoria, and The Poet's Dinner at the Hotel Astor in 1916.

COFFEE SHOP. Advocating the profit possibilities of the sharp freeze facilities available in the small coffee shop kitchens, the author points out the possibility of using small parts of meat cuts so often wasted.

RUBBER MATTRESSES. A digest of an address given by executive housekeeper of Michael Reese Hospital emphasizes the exceptional qualities of latex mattresses and describes in detail these advantages.

Journal of Home Economics

Vol. 32, June 1940

*Family experience and the development of personality. M. L. Entorf.—p. 357.
*Consumer responsibilities. J. Gaer.—p. 360.
*An economist looks at home economics. F. B. Ward.—p. 366.
*Approved training for student dietitians. A. M. Tracy.—p. 378.
*Frozen batters and doughs. G. L. Sunderlin, O. D. Collins, and M. Acheson.—p. 381.
*A method for the study of the availability for human nutrition of the vitamin C in foods, with an application to the study of the potato. M. M. Clayton and M. T. Folsom.—p. 390.

"Save" a few cents with cheap dishwashing compounds—and up go your dishwashing costs where they're *greatest*—in labor, breakage, water, towelling, laundry! For cheap compounds are bound to turn out filmy-looking glasses, streaked dishes, spotty silver—which mean costly hand-towelling. The few cents per pound such compounds "save" are quickly lost in extra dollars spent for increased dishwashing overhead!

Time and again, in actual test cases, thousands of dollars have been saved in dishwashing department overhead by a switch to Super Soilax and Super Soilax Service. They have eliminated the extra work made necessary to get really clean dishes with cheaper compounds. They have done away with towelling, hand-scouring, re-washing. They have prevented scale, grease, and odors in dishwashing machines . . . stopped clogging, reduced "cleanouts".

Investigate! Write Economics Laboratory, Inc., St. Paul, Minn. Representatives, warehouse stocks in 32 principal cities.

SUPER SOILAX

FOR MECHANICAL DISHWASHING OF CHINA GLASS SILVER

FAMILY RELATIONSHIPS. The inclusion of subject matter dealing with family relationships within the home economics curriculum is relatively recent. Unlike many of the physical elements involved in housekeeping, family relationships cannot be standardized, hence the difficulty of teaching family relationships. Family relationship courses or units tend to round out the student's conception of family life. Problems of home living may be discussed in an atmosphere of tolerance, objectivity, and sympathy; and the student is allowed to discover that his is not the only family in which strains, tensions, and dissatisfactions occur.

CONSUMER RESPONSIBILITIES. The consumer should start out with the honest desire to get for a dollar no more and no less than a dollar's worth of goods or services. No consumer should try to save at the expense of other consumers. Consumers should not abuse the privilege of returning goods, charge accounts, free delivery and other services. If a solution to the consumer problem is to be found, the first step must be consumer education.

AN ECONOMIST LOOKS AT HOME ECONOMICS. If the home economics program prepares adequately for gainful employment, duties of citizenship, community life, responsibilities of homemaking, and development of the individual's ability, culture, and philosophy, it is doing not only a good job but an excellent job.

STUDENT DIETITIANS. The broad objective of all approved courses, regardless of type, is to give properly qualified graduates of accredited colleges that further professional training and practice in the application of knowledge which cannot, by the very nature of undergraduate instruction, be given on a campus and yet which is essential to the proper preparation for professional life. That this objective is being creditably attained is shown by the record of approved course graduates in professional positions over the country.

FROZEN BATTERS AND DOUGHS. Many batters and doughs may now be added to the list of foods for which freezing is a satisfactory means of preservation.

AVAILABILITY OF VITAMIN C. A method which involves the use of a potentially neutral basal diet, together with blood and urine analyses, is presented for use in the study of availability of vitamin C in foods. By the use of this method it was demonstrated that three medium-sized baked potatoes of the Green Mountain variety can supply two-thirds of the optimum daily requirement for vitamin C of a normal adult.

Modern Hospital

Vol. 55, July 1940

*Hospital salaries—dietitians. A. B. Mills.—p. 50.
*Equipping a modern kitchen. M. M. Harrington.—p. 86.
Teaching diet therapy. M. E. Lenker.—p. 92.
Food cost tables—staples. G. S. Saunders.—p. 90.
August menus for the small hospital. M. B. Stolz.—p. 94.

DIETITIAN SALARIES. In a study of incomes of executives and department heads in nearly 1400 hospitals, data is presented concerning the average salary of 852 dietitians in United States and Canada as affected by the size and location of the hospital. Suggested duties of a dietitian are listed.

EQUIPMENT. Centralized food service from a modern kitchen at Harper Hospital, Detroit, uses work units and storage spaces systematically arranged, time-saving equipment, and air-conditioning to secure more efficient food control.

Nation's Schools

Vol. 25, April 1940

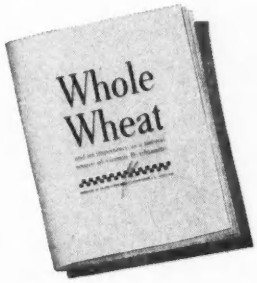
How to apply for a teaching job. H. D. Eldridge.—p. 27.
New life for furniture. W. C. Hawkins.—p. 40.
*Care of wood floors. L. C. Helm and K. P. Grabarkiewicz.—p. 41.
*Fair play for floor brushes. C. Ethington.—p. 43.
*School housekeeping suggestions.—p. 44.
*Economies in maintenance. D. R. Kovar.—p. 45.
Vacation care of equipment.—p. 46.
Scrub-up time for walls. T. D. Walker.—p. 48.
*"Stagger" system stops crowding. G. A. Feingold.—p. 70.
*Food cost tables—beans. G. S. Saunders.—p. 76.

WOOD FLOORS. A complete discussion of the 4 common methods of cleaning and treating wood floors lists the best points of each method.

FLOOR BRUSHES. Maintenance, life and usefulness of floor brushes depend first on the quality of the brush, next on its care. Suggests rules

Helpful Class Material

on whole wheat and its value in American dietaries



New illustrated 24-page book giving valuable resume of latest scientific whole wheat data. Available to professional groups.

Leaflets, reprinted from 24-page book, available to teachers for distribution to students of nutrition.

Since 1925, the Ralston Research Laboratories have been conducting biological experiments on the nutritional benefits of wheat germ, one of Nature's richest sources of vitamin B_1 (thiamin). This work, begun long before vitamin B_1 was isolated or identified, included careful studies on the use and value of wheat germ in fortifying Ralston Wheat Cereal. The resulting data, supported by the findings of other research workers, have now been compiled and put in book form by the Ralston Research Laboratories.

This material includes the results of studies by medical authorities, charts showing functions of various vitamins, and minerals —their requirements and sources, essentials of an adequate diet, diets and recipes for increasing vitamin B_1 intake. Book and reprints will be sent free on request. Use coupon below.

Please send me: ☐ 24-page bound book, "Whole Wheat."

Also send the following leaflets (indicate number wanted):

____"Wheat and Its Use as Food"; ____"Value of Vitamin B_1 in the Daily Diet"; ____"Vitamin Requirements in Normal and Special Diets"; ____"Mineral Requirements in Normal and Special Diets"; ____"Essentials of an Adequate Diet"; ____"New Ways to Serve Wheat Cereal"; ____"Watching a Cereal Being Made."

Paste this coupon on penny post card with your name and address and mail to Ralston Purina Company, 933A Checkerboard Sq., St. Louis, Mo. (Offer limited to U.S.A.)

Ralston puts the B_1 in Breakfast

for buying best quality, and illustrates how to care for brushes.

HOUSEKEEPING SUGGESTIONS. Written especially for school maintenance departments, this article contains ideas on cleaning which can be applied to many other fields. Window and window shade cleansing and door mat refurbishing are examples.

MAINTENANCE ECONOMIES. Any maintenance department looking for adequate and inexpensive methods for keeping buildings and equipment in good condition will welcome this article on economic ways for taking care of walls, table tops, furniture and window panes.

STAGGERING LUNCHES IN SCHOOL CAFETERIA. A complete story of how the Bulkeley High School, Hartford, enrollment 1900 and seating capacity 600, successfully used the "stagger" method for serving lunches. Also tells how they managed the problem of pupil's "sack lunches."

FOOD COSTS—BEANS. A well-organized table gives information on costs A. P. for fresh green snap, canned combination cut, and frosted green beans. It furnishes a simple method of comparing the cost per serving of the food in various forms.

Personnel Journal

Vol. 19, June 1940

Psychology and management. W. H. Wulfeck.—p. 49.
*Work and its illumination. C. E. Ferree and G. Rand. —p. 55.
*Wage setting based on job analysis and evaluation. C. C. Balderston.—p. 78.
*The strategy of job finding. G. E. Lyons and H. C. Martin.—p. 78.

LIGHTING. Good lighting requires proper amount and distribution to ensure absence of glare, troublesome shadows and dark surroundings. Good vision involves good lighting, adjustable to the work and the individual, and correction of eye defects.

WAGE SETTING. Discusses the different technics of job analysis and the application of systematic wage setting to the development of a good relations policy.

JOB FINDING. The selection of a vocation, interviewing technics, employment practices and the elements of job-finding of interest to job-seeker and personnel manager.

Practical Home Economics

Vol. 18, June 1940

*Trends in school cafeteria management. S. E. Moorhead.—p. 181.
Our Cleveland school lunchrooms. M. Hemmersbaugh. —p. 182.
*Americans turn to American recipes.—p. 183.
*Large quantity recipes for June.—p. 184.

SCHOOL CAFETERIA MANAGEMENT TRENDS. "The management of a school cafeteria is becoming more and more a specialized and technical business," says Dr. S. E. Moorhead, president, Board of Education, Portsmouth, Ohio, in his analysis of the problems of the cafeteria manager. The trained manager will continue to become more and more in demand for these positions.

AMERICAN RECIPES. Marie Casteen, director of research for the Statler Hotels, while working in conjunction with the chefs, found that American foods are growing increasingly popular, and includes two recipes for baked beans, Boston and New York style.

RECIPES—LARGE QUANTITY. Four recipes for large quantity cookery include: an apricot pineapple pudding, a fruit punch, a chocolate chip bread pudding, and one for cornbread.

Restaurant Management

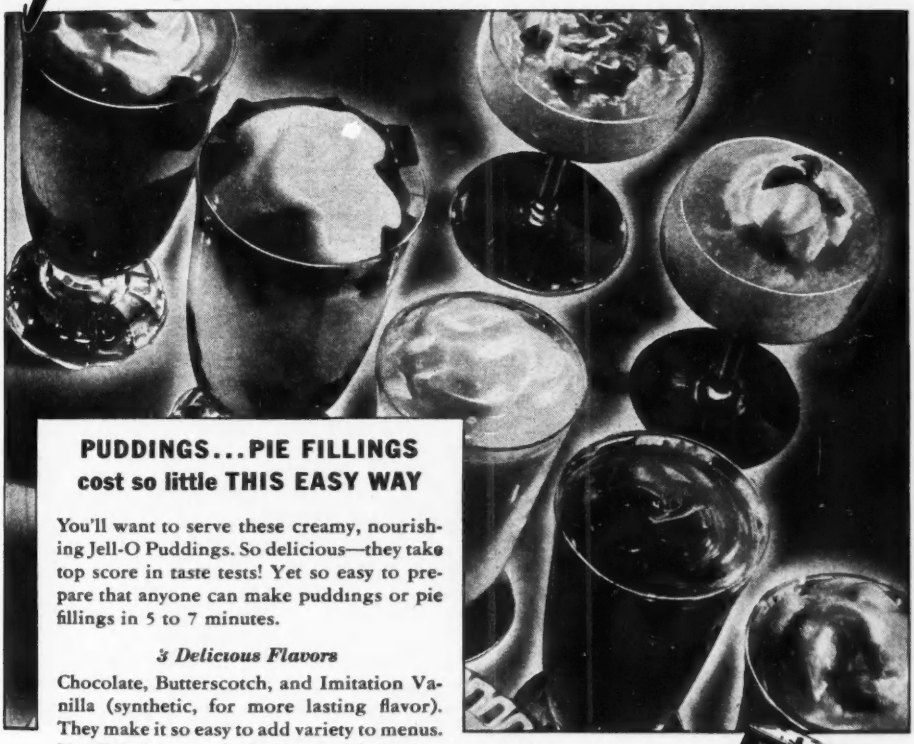
Vol. 46, June 1940

*Before going on duty (bus boy).—p. 12.
*Coffee shop modernization at the Pennsylvania Hotel. —p. 14.
*Designs for fuel reduction.—p. 18.
*Use and abuse of food control. R. J. Kief.—p. 22.
*Table linen quiz. C. M. Dahl.—p. 26.
*Suburban restaurant makes hit! R. A. Emnett.—p. 28.
*Less work for cooks.—p. 30.
*Louis P. De Gouy's good food hints.—p. 32.
*Grapes chart.—p. 33.
*Twenty-five popular fruit cups for desserts.—p. 41.

BUS BOY. One in a series of service standards, this concerns the properly groomed bus boy.

PENNSYLVANIA HOTEL COFFEE SHOP. Modernization of the lunchroom of the Statler-

Tempt Weak Appetites WITH THESE NOURISHING DESSERTS!



PUDDINGS... PIE FILLINGS cost so little THIS EASY WAY

You'll want to serve these creamy, nourishing Jell-O Puddings. So delicious—they take top score in taste tests! Yet so easy to prepare that anyone can make puddings or pie fillings in 5 to 7 minutes.

3 Delicious Flavors

Chocolate, Butterscotch, and Imitation Vanilla (synthetic, for more lasting flavor). They make it so easy to add variety to menus. You'll find it practical to serve all three as puddings—and as pie and cake fillings, too.

Purest Ingredients

If you were to choose the ingredients yourself you could not select any finer than we use in Jell-O Puddings. We guarantee these products will meet the highest standards of purity. Remember, they're economical, too. Jell-O Puddings are sold by your jobber.

The General Foods man who calls on youistrained to be helpful on food problems. He is at your service at all times.

Chocolate flavor contains milk solids, and requires only water. The other two flavors require the addition of milk.

JELL-O PUDDINGS

PRODUCTS OF GENERAL FOODS

(In writing to advertisers, please mention the journal—it helps.)

operated Pennsylvania Hotel, New York, into a modern, bright, gay, colorful yet restful coffee shop, resulted in a 33% increase in turnover and an increase in the average check from 51 to 59 cents. Layout and complete modernization data is included in the article.

FUEL REDUCTION. The two most common commercial cooking appliances used in eating establishments are the coffee urn and the steam table. Unless the urn and the steam table are the latest models, there will be a great loss of heat, principally by radiation. Simple jacketing and skirting trim on urn and steam table cuts fuel consumption 24 to 42%. Construction details, including diagrams, are given in the article.

FOOD CONTROL. Discusses food control in hotels based on experiences with the Statler Company. Compares hotel dining rooms with restaurants, showing how the former must meet the competition of the commercial restaurant by means of adequate food cost control.

TABLE LINEN. A detailed study of linen purchase, use and care, includes buying specifications, definitions of terms, how to identify linen, how to secure longer service from table linen, standard sizes for table linen and crests, monograms and marking methods. Examples of forms for perpetual inventory for linen, record of reserve linen issued, record of table linen replacements and losses, report of discarded linen, linen exchange receipt, and cost record for mending table linen, are included.

SUBURBAN RESTAURANT. A five-day week, shorter working day, greater interest in sports, and better highways, make for more successful suburban restaurants such as Le Chateau, located at the intersection of two major highways in St. Louis County, Missouri. Intensive selling efforts and showmanship have built up patronage. Details of construction are also given.

LESS WORK FOR COOKS. The "Roboshef" in San Francisco, first of a chain of restaurants on the Pacific Coast to feature automatic cookery, has been an outstanding success. The new mechanical marvel know as the "Roboshef" prepares steaks, chickens, fish, fried potatoes, biscuits and other dishes. All the major units of a dinner order are synchronized so that the whole order comes off at one time, ready to be served. Details of operation are included.

GOOD FOOD HINTS. A new service features menus and recipes on a stiff yellow sheet. The recipes are printed on perforated sections which are easily removable and will fit in the ordinary recipe file. Menus have been made up of tested recipes from the ***Chef's Cook Book*** by L. P. De Gouy. The numbered recipes are quick reference aids to those who use this new collection of 2500 profitmakers.

GRAPE CHART. A chart lists the various kinds of grapes, their source, color, size, skin and pulp characteristics, sugar and solid contents, shape, use, season, skin, methods of storage, and how to serve.

FRUIT CUPS. A chart of 25 popular fruit cups for desserts gives proportions, ice, flavor, garnish, number of portions per quart, and cost per portion. The chart is figured on the basis of one quart; portion, ½ cup served in 4 to 4½ oz. glass.

CAFATRAYS

THE Original ROLLED EDGE TRAY

Eleven Correct Sizes—
One for Every Service

Light
Strong
Attractive
Quiet
Sanitary
Economical

That's all—but, of course, that's all there is to the perfect tray—and CAFATRAYS have every one of these characteristics.

Ask your equipment dealer—and *demand genuine CAFATRAYS*

CHELSEA PRODUCTS
281 11th Avenue, New York

SUNFILLED pure concentrated ORANGE and GRAPEFRUIT JUICES

establish a milestone in processing, packaging and quality achievement. They are true-to-fruit products at their best. Every food element and characteristic, natural to freshly squeezed Florida orange and grapefruit juices, are successfully captured and retained without recourse to adulterants or added preservatives.

Only a percentage of the normal water content has been temporarily borrowed . . . which, when returned by you, insures the same delicious flavor and consistency which Nature endowed.

ACCEPTED AMERICAN MEDICAL ASSN Council on Foods

COMPARE THESE TYPICAL ANALYSES
(Note vitamin C retention)

	Orange Concentrate; per cent	Concentrate diluted with 9 parts of water by volume; per cent
Moisture	24.0	89.7
Total Solids	76.0	10.3
Ash	2.7	0.4
Protein	3.5	0.5
Reducing Sugars	26.0	3.5
Sucrose	31.3	4.3
Carbohydrate (by difference)	63.3	8.6
Citric acid	6.5	0.85
Calories	2.67 per gm. 76. per oz.	.03 per gm. 10. per oz.

Vitamins—Concentrate: 2.5 mg. ascorbic acid (50 international units Vitamin C) per gram. Concentrate diluted with water (1:9) 680 international units Vitamin C per 100 c.c. or 200 International units per fluid ounce.

Complimentary trial quantities to institutions on request.

REDUCE YOUR COST-PER-SERVING TO AN UNPRECEDENTED LOW

There are no fluctuating market prices to consider . . . no unpredictable variations in flavor and consistency . . . no spoilage, shrinkage or waste disposal problems . . . no excessive demands on refrigeration facilities . . . only negligible storage space needed.

Try SUNFILLED and *taste* the difference
Buy SUNFILLED and *save* the difference

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NEWS NOTES

American Dietetic Association Annual Meeting, New York, October 20–24. The complete program for this meeting appeared in the August-September JOURNAL. Since that issue went to press, announcement has been received that the subject of "Nutrition and National Defense" will be discussed at this meeting. Dr. Foster Kennedy, New York, will speak at the annual banquet on the subject of "Science, Civilization and Faith."

American Hospital Association held the forty-second annual meeting at the Hotel Statler, Boston, September 16–20. Papers of interest to dietitians were presented before the Dietetic and Administration Sections as follows: "A Nutritional Study of Hospital Diets", T. D. Mackie, M.D., and Dorothy DeHart, chief dietitian, Roosevelt Hospital, New York; and "Are Special Diets Overdone?", Mary Ruth Curfman, supervising dietitian, St. Luke's Hospital, New York. At a panel discussion led by Alta B. Atkinson, administrative dietitian, New York Hospital, the following subjects, "Tools for Management," "Training for Supervision," "Training the Personnel," and "Rating the Employee," were discussed by Bertha E. Beecher, Douglas V. Brown, Mrs. Chester C. Dodge, J. E. Doyle, and Maniza Moore; and "The Personnel Problem", by James B. Slimmon, Glenwood J. Sherrard, Bertha E. Beecher, and Edgar C. Hayhow.

The American Red Cross announces that the annual Red Cross Roll Call begins Armistice Day. Every effort will be made to increase enrollment this year. Everyone knows the American Red Cross is helping to care for millions of wounded combatants and civilians engulfed in the maelstrom of war. But many overlook the fact that here in the United States the Red Cross is providing greatly needed services every day of the year. In addition to the usual war and disaster relief, aid to armed forces and veterans, first aid, life saving, accident prevention, public health nursing, volunteer and civilian home service, the Red Cross this year is enrolling medical technologists to serve with the Army and Navy in the event of a national emergency.

Conference of Leaders of National Organizations. At the invitation of Harriet Elliott, consumer adviser, the President's National Defense Commission, Mrs. Beula B. Marble represented the American Dietetic Association at a conference on consumer problems in Washington, D. C., August 1. The conference discussed nutrition, public health, and methods by which national organizations could work with the National Defense Commission.

The Dietitian in Government Service. After the paper under this title by Nell Wickliffe and Frances Boykin had gone to press for the August-September issue, Miss Wickliffe wrote that another dietitian had been appointed under the Department of Justice to the Federal Reformatory for Women which opened September 1 at Seagoville, Texas.

A New York State Nutrition Conference, sponsored by New York State Departments of Health, Education, and Social Welfare, and New York State College of Home Economics, was held July 15–17 at Cornell University, Ithaca, with the general theme, "Coordination of Community Effort for Better Nutrition." Among the speakers were the following:

Mary Sweeney, Merrill Palmer School, Nutrition as a Family and Community Problem.

Clive McCay, New York State College of Agriculture, Interplay in Dietary Constituents.

Lydia Roberts, University of Chicago, New Research in Minerals and Vitamins.

Flora Thurston, New York State College of Agriculture, Emotional and Environmental Factors in Nutrition.

Michael Hanna, Columbia Broadcasting System, Radio as a Means of Education.

Eloise Davidson, New York *Herald Tribune*, Publicity and News Writing.

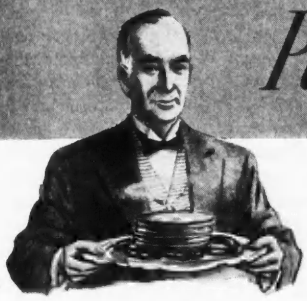
Josephine Strode, New York State College of Agriculture, Educational Value of Home Visits.

Anna dePlanter Bowes, Pennsylvania State Department of Health, Simple Demonstrations as a Means of Education.

Alice Keliher, Progressive Education Association, Movies as a Method of Education.

HERE ARE THE FACTS ABOUT

ARMOUR'S STAR Pure Pork Sausage



The Ingredients and Processes we use to keep its Quality and Food Value High

1. STAR PURE PORK SAUSAGE STARTS HERE with fine cuts of pork, chopped to the right consistency in this machine. The texture of sausage is important to its flavor. That's why this chopping process is carefully controlled, always uniform.

2. FRESH SPICES . . . CAREFUL, SANITARY PREPARATION

The spices used in Star Pork Sausage are freshly ground or extracted, as needed, to preserve all their seasoning value. And Star Pork Sausage is prepared fresh daily, by strictly maintained Federal Inspected formulae, in Armour's sausage kitchens. These kitchens are kept sanitary, with daily steam sterilization of machines and tables.

3. SOME LESS OBVIOUS QUALITY CONTROLS

All pork in Star Pork Sausage comes from Government Inspected hogs.

Star Pork Sausage is made of pure pork . . . no other meats or cereals are added.

4. AND STAR PORK SAUSAGE HAS THE DIETICIAN'S APPROVAL

This pure pork sausage is high in appetite-appeal and satiety value. It provides an abundance of calories. It is an excellent source of the Vitamin B Complex factors, especially thiamin. It is prepared with wholesomeness, fine flavor, controlled quality foremost in mind.

ARMOUR and COMPANY

Edna Amidon, U. S. Office of Education, How the Findings from Recent Surveys on Family Spending Should Affect Teaching Done in Homes.

Delpha Wiesendanger, New York State College of Home Economics, Home Management: Does it Concern the Nutrition Worker?

Mark Entorf, New York State College of Home Economics, Family Relationships: Do they Concern the Nutrition Worker?

Adelaide Spohn, Elizabeth McCormick Memorial Fund, Spending the Community Food Money More Wisely.

Wilson G. Smillie, M.D., Cornell Medical School, What You Should Know about the Nutrition of the People in Your Community.

Dwight Sanderson, New York State College of Agriculture, How to Make a Simple Survey to Get that Information.

Dr. Elizabeth M. Gardiner, director of the Division of Maternity, Infancy and Child Hygiene of the State Department of Health in Albany, and special agent for the U. S. Children's Bureau, was chairman of the committee in charge which included among others: May McDonald, supervisor of Home Economics; Mame Porter, nutritionist, Department of Social Welfare; Treva Kaufman, supervisor of Home Economics Education; Mary McCormick, supervisor of Health Teaching; Marie Swanson, supervisor of School Nurse Teachers; and Jessie Cole, Marguerite Queaneau, and Margery Vaughn, nutrition specialists, Department of Health.

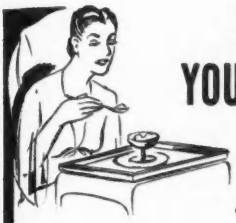
Food and Drug Administration reported on July 20 further seizures of numerous lots of foods —the following as a result of decomposition, in whole or in part: frozen whole eggs; canned peas; maple syrup; canned tomato juice, tomato catsup, purée, sauce, and soup; and canned pork and beans with tomato sauce. Insect-infestation accounted for the seizure of whole wheat flour; coffee substitutes; apple chops; dried peaches; canned peas; tomato catsup, and tullibees. Other lots were seized because of filth: namely, crabmeat, candy, and corn meal. Economic violations accounted for seizures of low-fat butter, and short-weight macaroni and boric acid powder. Seizures were also reported of items found to be in violation of the deceptive packaging provision, being packed in oversize cartons or boxes, *i.e.* spaghetti, candy, noodle soup mixture, potato pancake mix, spaghetti dinner, macaroni, and salted peanuts.

The Federal Security Agency will reopen for public hearing those provisions of the standards for canned peaches, pears, apricots and cherries concerning the use of sugar and corn sugar and the related question of label declaration of the kind of sugar used. While the label declaration of neither sugar nor corn sugar is required, the regulations do require that the strength of the syrup used be stated on the label in such terms as "light syrup", "medium syrup", "heavy syrup", and "extra heavy syrup".

A regulation has been promulgated establishing a definition and standard of identity for dried skim milk, also known as powdered skim milk or skim milk powder, effective October 10, 1940. Details are published in the Federal *Register* of July 12, copies of which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents each.

Toxicity of Lead Arsenate Spray Residues. Federal Security Administrator Paul V. McNutt announces that he has requested the Public Health Service to expedite a scientific review of the recently completed report on its three-year investigation of the toxicity of lead arsenate spray residues "to determine whether it can be made the basis of new tolerances." This request was prompted by an inquiry from R. W. Gray, manager of the California Tree Fruit Agreement, relative to a report that the Federal Security Agency contemplates an early increase in the tolerance. The existing situation with respect to lead and arsenic tolerances was summed up in an announcement of the Secretary of Agriculture on September 19, 1938, in which the tolerance for arsenic trioxide was stated as of 0.01 grain per pound. Upon the recommendation of the United States Public Health Service, a tolerance for lead of 0.025 grain per per pound was adopted and a fluorine tolerance of 0.01 grain per pound was later raised by the Secretary of Agriculture to 0.02 grain per pound.

On August 10 the Federal Security Agency sent the following announcement to growers and shippers of apples and pears: "Effective immediately, spray residue tolerances for apples and pears shipped within the jurisdiction of the Federal Food, Drug, and Cosmetic Act are set at 0.05 grain of lead per pound and 0.025 grain



DELIGHT YOUR PATIENTS WITH *Luscious* *Carbohydrate free* D-ZERTA

Six Delicious Flavors for Tempting Desserts and Festive Salads

D-ZERTA comes in the same six delicious flavors as JELL-O . . . America's Most Famous Dessert, with sugar replaced by just enough saccharin to satisfy the craving for sweets of patients on restricted diets. In appearance and flavor, too, D-ZERTA is highly appetizing. You can increase variety in desserts and salads . . . use these six rich fruity flavors to vary your menus:

NATURAL ORANGE, LEMON, and LIME
IMITATION STRAWBERRY, IMITATION RASPBERRY, and IMITATION CHERRY

D-ZERTA (U. S. Patents 1,522,428 and 2,178,569) is easy to serve . . . everything's included. All you do is add hot water (it need not be boiling) and place in refrigerator to set.

D-ZERTA'S INGREDIENTS

(Average composition of one serving)

Carbohydrate	None
Fat	None
Protein (highest grade gelatin)	2.80 g.
Mono sodium citrate	1.78 g.
Saccharin	0.04 g.
Flavoring (non-carbohydrate)	q. s.
U. S. Certified color (non-carbohydrate)	q. s.

D-ZERTA

The Sugar-Free Carbohydrate-Free Gelatin Dessert

MAIL THIS COUPON FOR *FREE* SAMPLE

General Foods A.D.A. 10-40
Professional Service Dept.
Battle Creek, Michigan

Gentlemen:

Please send me without obligation, a sample of D-ZERTA.

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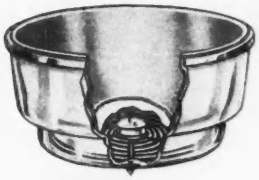

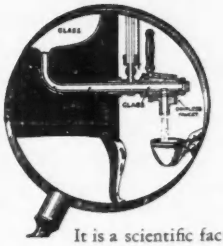

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of arsenic (as arsenic trioxide) per pound." It is said that the new tolerances are based on the results of a three-year study made by the United States Public Health Service of 1231 men, women and children. The subjects of the field study lived in a district where large quantities of lead arsenate are used, and have been used for over 30 years, as an insecticide on apples and pears. According to the announcement "The Public Health Service would not feel justified in stating that tolerances higher than these might not endanger the health of the consumer."

The Council on Foods, American Medical Association. The *Journal* of the American Medical Association for July 20 states that the Committee on Scope of the Council believes that attention should continue to be paid to individual products intended for infant feeding, special foods for feeding the sick, and foods which have been manipulated in such a way as to enhance their nutritional properties (by the addition of preparations of vitamins, minerals or other dietary essentials), devoting more attention to nutritional claims and interpretations of laboratory and clinical reports on the nutritive properties of foods and diets. The first printing of the *Symposium on the Vitamins* has been entirely disposed of and the printing of an additional number of copies to meet the anticipated demand for one year has been authorized. As far as general purpose foods are concerned, it was decided that with few exceptions, fortification of these products could well be restricted to the restorative addition of important nutritional essentials for which a greater intake is considered to be in the interest of public health. In this way processed foods would be brought up to the original high nutritive level of unprocessed foods.

The cereal product having the highest vitamin B_1 content appears to be oatmeal, which may provide as much as 300 I. U. of vitamin B_1 to each hundred grams of dry material. Whole wheat contains on the average about 165 I. U. of vitamin B_1 per hundred grams. Most breakfast cereal foods contain considerably less vitamin B_1 than either whole wheat or oatmeal. It was decided that the addition to breakfast cereals of vitamin B_1, in the form of thiamine hydrochloride, up to the level of oatmeal would be in agreement with the Council's previously declared policy. This permits the restorative addition of vitamin B_1 to these products so that they may contain up to 300 units of vitamin B_1 per hundred grams, or 80 units per hundred calories.

It was decided that no objection would be taken to the restorative addition of substances rich in riboflavin to processed cereal foods. Claims must be restricted to statements of fact, however, such as "this product has been enriched with riboflavin to the value of whole wheat," or the like, because the principal dietary sources of riboflavin are milk and meats, and not cereals, even of the whole grain variety.

A great deal of advertising for food products partakes of the nature of dietary advice to the general public. Much of the commercial material that has been brought to the attention of the Council is not as truly educational as it might well be, especially with regard to material prepared with the seeming intent of increasing the consumption of some particular food. For example, the increased use of bread and cake and other bakery products prepared from refined cereals and high in carbohydrate content has been urged. While these products are wholesome foods, the inclusion of large quantities of refined cereal products in the dietary requires extraordinarily careful planning of the other components of the diet in order that the essentials for adequate nutrition may be attained.

There has been a tendency for manufacturers and distributors of foods to publish pamphlets embodying special dietary suggestions, particularly diet specifications for reducing purposes. These diets are prepared primarily to show how a particular food product may be included in a restricted ration for reducing weight. While small amounts of many foods, even those of high caloric value per unit weight such as fats, can be included in low-calorie rations, it is usually difficult to formulate adequate diets which include significant amounts of foods that supply calories and little else. Of course, small amounts of fat have a flavor as well as a satiety value. They increase the palatability of vegetables. Even a slice of white bread may have some advantages in making a reducing diet more acceptable to the person using it.

Registration of Aliens. U. S. Department of Justice, Immigration and Naturalization Service, announced in July the passage of the Alien Registration Act of 1940, which constitutes an important step in the national defense program. This Act requires the registra-

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tion and fingerprinting of all aliens above fourteen years of age, and the registration of aliens under fourteen years of age by their parents or guardians. Actual registration and fingerprinting began on August 27 and extends through December 26 of this year. Dietitians, as employers of many foreign-born workers, will wish to bring this to the attention of their alien employees. Registration, which is compulsory, will take place in the post offices of the nation and a fine of $1,000 and imprisonment of six months is prescribed by the Alien Registration Act for failure to register, for refusal to be fingerprinted, or for making registration statements known to be false.

Your Club and the Refugee is the title of a bulletin prepared for the use of the nine national organizations of women belonging to the Group Action Council, of which the A. D. A. is a member. Those interested may obtain copies of this bulletin at ten cents each from the National Federation of Business and Professional Women's Clubs, 1819 Broadway, New York. The bulletin presents a detailed summation of the situation of the refugee, with enlightening information under the following headings: World of Refugees, The Facts, The Number of Refugees, Religious Beliefs, Those Who Come, Employment and Refugees, Have Workers Been Displaced? What About the Doctors? Refugees Not Fifth Columnists, What We Can Expect from the Refugees, and Suggestions for Action. Various current ideas are refuted in this publication, such as the claim that this country is being flooded by a "horde of immigrants". Immigration in this country is limited to 153,774 from all countries in a year, and in the last several years an average of slightly less than 70,000 immigrants have applied for admission.

The Occupational Index, a continuous bibliography of current publications which contain, or profess to contain, occupational information helpful in choosing a field of work, published at New York University, Washington Square East, New York, in its August issue lists "A Survey of the Hospital Dietitian and Her Job", by S. Margaret Gillam, published in this JOURNAL for June-July and August-September; and "Opportunities in Administrative Dietetics", by Margaret E. Terrell, published in *International Altrusan* for June.

Martha Koehne is the author of "Adequate Diets at Low Cost" appearing in the *Ohio State Medical Journal* for July 1940. This article is an essentially sound and practical discussion of the problem and should prove helpful to others in the field.

California Dietetic Association. The San Diego Section elected the following officers for 1940-41: chairman, Helen B. Anderson, Scripps Metabolic Clinic, La Jolla; secretary-treasurer, Hermine Kroeger, County Hospital, San Diego.

The June meeting was held at the Paradise Valley Sanatorium with Ruth Little as hostess. Dinner was served to seventeen members and guests. Dr. Nelson spoke on "Vitamins in Surgery."

Announcement has been received of the marriage of Marie Nietert, Ventura County Hospital, to Dr. Clarence Henry Nelson.

Mrs. Mildred Chase Cook of the Chase Sanatorium, Los Angeles, has completed an interesting survey concerning the placement of state dietitians throughout the United States.

New Jersey Dietetic Association. Elizabeth McHugh of Maplewood is now an assistant dietitian at Orange Memorial Hospital. Before going to her new position she was at Mt. Sinai Hospital, New York, and the New Jersey State Hospital, Greystone Park.

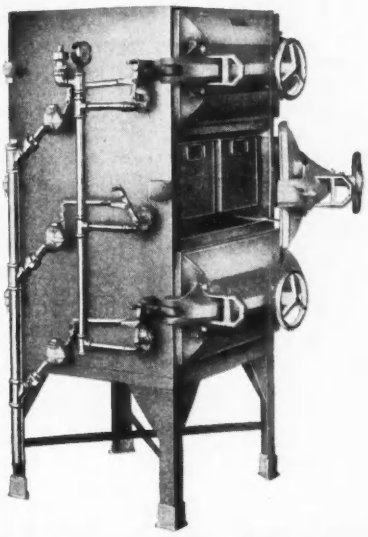
Auley Frizzell, an assistant at Hackensack General Hospital, Hackensack, was married in September.

Sally Morring, formerly head dietitian at Morristown Memorial Hospital, is now head dietitian at the City Memorial Hospital, Winston-Salem, N. C.

Mrs. Helene Melvin, head dietitian at the New Jersey State Hospital, Greystone Park, has resigned her position.

Wisconsin Dietetic Association. The Home Economics Section of the National Education Association was attended by members of state and local dietetic associations in June. The opening tea was held at Milwaukee-Downer College with Susan F. West and her staff as hostesses. The final event was a dinner at the Wisconsin Club.

The Executive Board of the state association met July 10 at Ann Emery Hall, Madison, and voted to cooperate in helping build consumer education into the program of national defense. One of the women's organizations in Milwaukee



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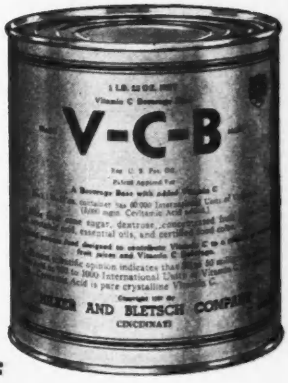

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has chosen a committee and has written Harriet Elliott, member of President Roosevelt's advisory commission to the Council of National Defense, that it is ready to participate in any way. Ada B. Lothe is general chairman of the group. Ethel Keating, Breta Griem, Ella Liner Lambert, Abby L. Marlatt, and Susan F. West of the dietetic associations are among the committee members.

The Milwaukee Dietetic Association held its last meeting of the season at Sheboygan with Anita Schaefer as hostess. After a tour through the hospital a picnic supper was awaiting the group at Evergreen Park. "Bratwurst", one of the special food items of the locality, was prepared and served.

Milwaukee Children's Hospital picnic for its diabetic children has been an annual event. Mrs. Stephen Briggs, a member of the board, initiated the picnic five years ago and has repeated it every year. The day spent at Pine Lake at the Briggs' home has many happy memories for these children. This year they ranged in age from 3 to 14 years. Nell Clausen and Magna Werra arranged that dietary prescriptions were met and included traditional picnic items.

Magna Werra, program chairman of the Milwaukee Dietetic Association, called a meeting of her committee at the Children's Hospital and plans were made for the coming year.

The June meeting of the HEWIBS was a social one at Breta Griem's home. There was much interest in the French refugee problem and a contribution was made to the fund.

Recent items of interest are the following: Elina Ellison and Jean Usher were June brides. Isla Jepson is now at Wisconsin General Hospital. Helen Field is at St. Luke's Hospital, Milwaukee. Frances Kelley, Veterans Administration Facility, Wood, has been transferred to Northport, Long Island, and Alice Brenkel, Indianapolis, will replace her at Wood. Mercedes Cranston has returned to Madison and is state supervisor of welfare projects.

A new position for a dietitian has recently been created at Milwaukee Hospital. Ruby Grambach, a University of Wisconsin graduate, formerly located at Independence, Missouri, has been selected to fill it. She is assistant to Beulah Anderson.

News from our Advertisers and Exhibitors. *H. J. Heinz Company* are distributing the eighth edition of their excellent nutritional charts, copyrighted May 1940. The content is designed to assist physicians, dentists and dietitians in prescribing ordinary diets and special regimens. In addition to the excellent tables on vitamins and manuals, new charts on the subjects of human nutritional requirements, food allergy, food poisoning and food fads, and a bibliography are included. Also included are structural chemical formulas for several of the vitamin substances and other new data on more recent additions to the vitamin family. The vitamin content of food is now indicated in International and Sherman-Bourquin units per 100 gm. This is one of the most useful booklets ever distributed by a commercial house. This same firm has another booklet entitled "To Make Life Easier for Mothers" which includes nutritional data applicable to babies, schedules, and blank pages in which to list the important events in the baby's early record.

Among the many excellent pieces of literature distributed by the *Wisconsin Alumni Foundation* is that on nutritional anemia, its causes and treatment. This small booklet contains information useful in teaching and in the dietary management of nutritional anemia.

The *Florida Citrus Commission* has recently stated that an extensive survey of Florida canned grapefruit and canned grapefruit juice, which included the analysis of several brands, indicates that these products may be considered the dietary equivalent of the fresh fruit. The vitamin C content averaged 40 mg. per 100 cc. of juice. The Commission also has available a set of cards giving quantity recipes and other useful information concerning the use of fresh and canned citrus products. These cards include portion yields.

United Fruit Company. To the dietitian's list of cultural literature may be added an illustrated booklet entitled "The Banana in Chinese Literature" by Philip K. Reynolds, reprinted from the *Harvard Journal of Asiatic Studies*. References are made to ancient Chinese writings and to statements concerning the banana in early Chinese medical lore.

Have You Heard?

Where decentralized service is used and milk is distributed to a number of ward pantries, often cans of a standard size, such as twenty quarts, are used for a supply which varies from

The Newer Concepts of Meat in Nutrition

The Protein of
Meat and its Advantages

THE need for protein, a constituent of all living tissue, is both qualitative and quantitative. In the light of current knowledge of biologic processes, ten amino acids (of the total of thirty now identified) are regarded as nutritionally indispensable. The list comprises tryptophan, lysine, histidine, phenylalanine, leucine, isoleucine, threonine, methionine, valine, and arginine. These ten amino acids are required for both growth and maintenance. Since they cannot be synthesized by the organism (except arginine which is produced in an insufficient quantity), they must be derived from protein-containing foodstuffs. An inadequate intake of one or more usually leads to retarded growth in the young and to an impaired state of health in the adult, as demonstrated in experimental animals.

Not only is protein necessary for growth, but it also enters into the chemical makeup of many hormones and enzymes; in addition it acts as a source of calories. Recent studies indicate that the optimum requirement for protein is from 80 to 100 grams daily, an amount which may not be supplied by the average diet. The protein requirements are higher during infancy and adolescence, and are increased by pregnancy, lactation, infectious fevers, hyperthyroidism, and protein loss as in nephrosis. Ingestion of amounts greater than the daily requirement is followed by deaminization of the excess, which may then be converted into glycogen. Careful observation has shown that a high protein diet exerts no deleterious influence on the normal organism, and that the normal liver and kidneys are not unduly overburdened by a large protein intake.

Meat offers many advantages as the daily source of protein: it is almost completely digested by young and old alike, yielding its amino acids without appreciable loss; the protein of meat, in contradistinction to the proteins obtained from many other sources, is nutritionally adequate, supplying all known essential amino acids in quantities sufficient for growth and for tissue maintenance and replacement without adding undue bulk to the dietary. Many nutritionists assert that meat should be the primary source of protein for the human organism.

Breuer, M. J.: Menus, Diets and Nutrition, Nebraska State M. J. *25*:222 (June) 1940.

Brockington, Fraser: The Dependence of Body-Weight on Animal Protein Foods: A Study of 120 Children in 63 Families, Public Health *7*:209 (April) 1939.

Hamilton, T. S.: Heat Increments of Diets Balanced and Unbalanced with Respect to Protein, J. Nutrition *17*:583 (June) 1939.

Jones, H. M.: Self-Selected Diets in Toxic Goiter, J.A.M.A. *115*:274 (July 27) 1940.

Kunerth, B. L., and Pittman, M. S.: Long-Time Study of Nitrogen, Calcium and Phosphorus Metabolism on Low-Protein Diet, J. Nutrition *17*:161 (Feb.) 1939.

Pittman, M. S., and Kunerth, B. L.: Long-Time Study of Nitrogen, Calcium and Phosphorus Metabolism on Medium-Protein Diet, J. Nutrition *17*:175 (Feb.) 1939.

Stengle, A., Jr., and Ravdin, I. S.: The Maintenance of Nutrition in Surgical Patients, with a Description of the Orojejunal Method of Feeding, Surgery *6*:511 (Oct.) 1939.

The Seal of Acceptance denotes that the statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute
CHICAGO

day to day. Measuring the milk into the cans takes so much time that the kitchen employee tends to slight it, and to estimate the quantity by its appearance in the can. This is inaccurate, and inaccuracy makes for friction between wards and kitchen.

How many hospitals have tried weighing it? For practical purposes, the old rule that "a pint's a pound" is accurate enough, and the distribution sheet can be set up as easily in pounds as in quarts. Weighing is fast and easy. As far as is known, the first hospital to use this method was St. Bartholomew's in London.

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Two practical applications of the principles of electrolysis:

1. "Wearever" has made four generations of steam kettle. The newest has legs cast as part of the kettle, and the next-to-the-newest has an aluminum flange which supports it on its iron band. Dietitians who have these two models need read no farther. Many of us, however, have the older models which rest on a cast iron band in such a way that moisture (and frequently salted moisture) can get between the iron and the aluminum, setting up an electric battery which in time pits the aluminum. Regularly once a year, the kettles should be disconnected and taken out and cleaned. The iron band should then be painted with a thick coat of aluminum paint for the protection of the kettle. The Wearever shop man told us that one, and inspection of a six-year-old set of kettles which had not been so cared for, proved its truth.

2. Where an institution has part of its kitchen utensils in aluminum and part in stainless steel, constant supervision of employees is necessary to see that only stainless steel ladles and spoons are used with stainless steel kettles and steam table and truck insets, and aluminum only with aluminum. If the two metals are mixed, with an excellent conductor like salted soup between, the aluminum will suffer. It took just a year in a steam table where aluminum utensils were used with stainless steel insets, for the rivets holding the handles on the ladles to loosen.

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Where the giving of orange juice is routine treatment for hypoglycemia, the dietitian always has a problem in keeping a supply on the floor where there are diabetics. Fresh orange juice must be kept in a refrigerator, and has a way of disappearing. It is perishable, and must be replaced daily if not used. One of the twenty-year-old sources of friction between nurses and the dietary department has been solved by changing the routine remedy to pineapple juice, which is supplied in seven-ounce cans (just enough for one usual dose) and is kept in the locked medicine closet. The supply therefore becomes the responsibility of the head nurse, who is very glad to take care of it, to solve her own problem. After all, while dietitians have fretted about the cost of daily replacement of fresh orange juice and the bother of losing it, the nurse is the one who takes care of the patient and must meet the immediate emergency.

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Does the milk and cream mixture for ulcer feedings disappear from your ward refrigerators? Does it seem to take a lot of nursing time to distribute these feedings every hour? This was suggested by a supervising nurse:

Send the mixture to the wards in large nursing bottles. Nine ounces, which is usually enough for three feedings, can be put in each bottle, and the ward dietitian can order by the number of bottles required. A bottle is kept in a pitcher of ice at the patient's bedside, and he is instructed to take three ounces every hour. He needs no graduate to measure the amount, since the bottle is graduated. The person whose business it is to distribute the feedings goes to the pantry only once in three hours, and the patient learns to take responsibility for feeding himself regularly, which he will need to do when he leaves the hospital. Amazing to relate, the ice-box prowlers are impressed by the baby bottles and leave them alone!

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An old suggestion, but one which some of us may still like to be reminded of, is that the easiest way to clean silver is to boil it in an aluminum kettle, with a teaspoon of salt and a teaspoon of baking soda to each gallon of water.

When the kettle shows the effects of hard usage, have the engineer cut up for scrap aluminum the bottomless sauce pans and handleless ladles which every kitchen accumulates, and put these pieces of aluminum into the kettle with the silver.

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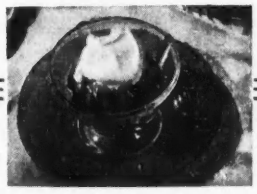

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WHO'S WHO IN THIS ISSUE

Adelaide P. Barer, Ph.D., is research associate in the Department of Internal Medicine, The State University of Iowa. **W. M. Fowler,** M.D., is an associate professor in that department.

W. L. Mallmann, Ph.D., is associate professor of bacteriology, Michigan State College.

Albert D. Kaiser, M.D., is associate professor of pediatrics, Strong Memorial Hospital, University of Rochester, and attending pediatrician, Rochester General Hospital, Rochester, N. Y. Dr. Kaiser graduated from the University of Rochester and Harvard University, and interned at Boston City Hospital and Rochester General Hospital.

Levelle Wood is an associate professor of institution management in the Division of Home Economics at Kansas State College and has been manager of the Women's Residence Hall on that campus since 1928. She was formerly an instructor in home economics in high school and normal school in Oregon. Miss Levelle received the B.S. degree from Oregon State College and the M.S. degree from Teachers College, Columbia University The text, *Food Service in Institutions*, of which she is co-author, was published in 1938.

Caroline W. Edwards, supervisor, Home Economics Education, Territory of Hawaii, received the B.S. degree from Columbia University. She has been in the Territory for eighteen years during which time she has developed the cafeteria and vocational homemaking programs as well as classes for adults in homemaking. Mrs. Edwards is a life member of the National Education Association and a member of the American Vocational Association. **Frances F. Wynn** is traveling instructor, Oahu Cafeterias, Hawaii.

B. B. Vincent Lyon, M.D., internist, gastroenterologist, has been associate professor, Jefferson Medical College, since 1937. He is a Fellow of the American College of Physicians and the American Medical Association and a member of the American Gastroenterological Association. Dr. Lyon is a member of the editorial staff of the *American Journal of Digestive Diseases*. During the first World War Dr. Lyon was attached to Field Hospital 12, with the 1st Division, Pierrefonds, during the Soissons engagement, and Evacuation Hospital 7 with the 42nd Division in the Chateau-Thierry Sector. He is the author of chapters in connection with his specialty in De Costa's *Handbook of Medical Treatment*, Tice's *Practice of Medicine*, Osler's *Modern Medicine*, and the *Cyclopedia of Medicine*.

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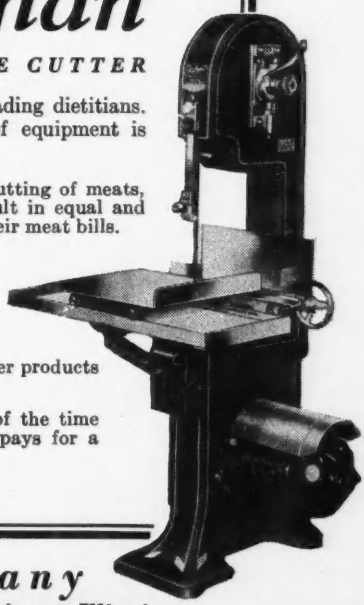

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